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## The Bancroft Memorial Lecture.<sup>1</sup>

### MEDICINE IN PEPYS'S DIARY.

By MATTHEW J. STEWART,  
*University of Leeds.*

JOSEPH BANCROFT, a Manchester man by birth, died fifty-seven years ago, after spending rather more than half his life in medical practice in Brisbane. He has left behind him, both as doctor and as naturalist, an enviable record of performance which will long remain as a stimulus and an example to his successors. His discovery three-quarters of a century ago of the adult form of the parasitic worm which now bears his name—*Wuchereria bancrofti*—was perhaps his most outstanding scientific contribution, and the one for which he is most likely to be remembered, but the foundation, thirty-two years after his death, of a "memorial lectureship", now raised to the dignity of an "oration", is a tribute, not so much to this single discovery, important though it is, as to the whole stature of the man, who in his day and generation was held in the highest regard by the citizens of this town and in particular by the members of his own profession.

The subject I have chosen for tonight's address is one in which I have long been interested. Samuel Pepys was a great seventeenth century civil servant, but, until recently, his fame has rested mainly (and securely) on his activities as a diarist. His diary, begun on January 1,

1659-60, ended prematurely on May 31, 1669; but during this period of nine years and five months Pepys kept a record of personal experiences and contemporary events of unsurpassed interest and no little historical importance. As the diary was kept in an elaborate cipher or shorthand, very difficult of translation, he was emboldened to record therein the most private and confidential matters as well as (to quote his own words) things "fit for . . . all the world to know". It is this fact which has made his diary such a valuable historical document and incidentally such an amusing, delightful and exciting personal record.

The first and heavily expurgated edition of the diary, Lord Braybrook's, based on the translation by the Reverend John Smith, appeared in 1825. The much fuller edition, edited by Henry B. Wheatley and based on the translation by the Reverend Mynors Bright, first appeared in 1893. This edition, published by Messrs. S. Bell and Sons, of London, has been frequently reprinted and is still obtainable in a thin-paper three-volume edition.

Pepys's fame as a diarist, commencing with the first translation of the diary a century and a quarter ago, has steadily increased throughout the years, but it would seem that, except perhaps by professed naval historians, his great services to the British Navy in the latter part of the seventeenth century had been largely forgotten by the time the diary was translated and published. Since then he has come back into his own, and in recent years Arthur Bryant's masterly account of the life of Pepys has done much to make known to the reading public the debt we owe to this most faithful, efficient and knowledgeable of public servants.

Before going on to the essential subject of my address, "Medicine in Pepys's Diary", I must first say something about the man himself.

<sup>1</sup> Delivered at a meeting of the Queensland Branch of the British Medical Association on June 1, 1951.

Coming of good East Anglian stock, Samuel Pepys was born, probably in London, on February 23, 1632-33, and lived to the age of seventy years. He was born, therefore, in the eighth year of the reign of Charles I, and as a boy of sixteen was an eye-witness of the execution of that unhappy monarch. He had the good fortune to be related to Sir Edward Montagu, first Earl of Sandwich, whose mother was a sister of Pepys's grandfather, and it was to him that he owed his first appointment in the Public Service. Pepys first went to school in Huntingdon and later to Saint Paul's School, London, and from 1650-1651 to 1653 he was an undergraduate of Magdalene College, Cambridge, taking his B.A. degree in the latter year. Two years later, at the age of twenty-three, he married Elizabeth St. Michel, daughter of a French Huguenot, who had come to England with Henrietta Maria at the time of her marriage to Charles I. In 1659-60 Pepys was appointed clerk to Mr. Downing, one of the tellers of the Exchequer, at a salary of £50 a year, and it was while holding this office that he commenced his diary. In the same month he was appointed one of the clerks of the Council, but two months later he was made secretary to his patron and relative, Sir Edward Montagu, one of the Generals at Sea, as they were then called, and accompanied him to Holland on the voyage which culminated in the return and restoration to the throne of Charles II.

Whatever Pepys's politics prior to this event, and one gathers that they were rather nebulous, it is obvious from the diary that he was wholly captivated by King Charles and his brother James on this first occasion of their meeting, a loyalty in which he never faltered.

The period of Pepys's employment as a public servant coincides almost exactly with the reigns of Charles II and James II. During that time he held in succession two very important posts, first that of Clerk of the Acts of the Navy, obtained for him by the Earl of Sandwich soon after their return from Holland, and later, from 1673 to 1679, and again from 1684 to 1688-89, that of Secretary of the Admiralty. If the first of these appointments was nepotistic, the second was certainly dependent on Pepys's performance and merits. As Clerk of the Acts he had impressed everyone with his ability, energy and integrity; he had certainly earned promotion. During the period covered by his tenure of these offices and in his five years of retirement from 1679 to 1684 Pepys had many ups and downs. His diary, unfortunately, covers only the first nine years and five months of this time, but the later details of his life are accurately known from his correspondence and from official and other records. The termination of the diary was due to his failing eyesight, the result of some form of optical defect which had troubled him for a number of years. Pepys's diary is a voluminous one, and it was kept in a cipher consisting of no less than 314 different shorthand characters. All this, together with his extensive correspondence and the writing of innumerable memoranda, must have been a severe tax on eyesight already defective. And so on May 31, 1669, we find the last pathetic entry:

And thus ends all that I doubt I shall ever be able to do with my own eyes in the keeping of my Journal, I being not able to do it any longer, having done now so long as to undo my eyes almost every time that I take a pen in my hand; and, therefore, whatever comes of it, I must forbear; and therefore, resolve, from this time forward, to have it kept by my people in long-hand, and must therefore be contented to set down no more than is fit for them and all the world to know; or, if there be any thing, which cannot be much now my amours to Deb, are past, and my eyes hindering me in almost all other pleasures, I must endeavour to keep a margin in my book open, to add here and there, a note in short-hand with my own hand.

And so I betake myself to that course, which is almost as much as to see myself go into my grave; for which, and all the discomforts that will accompany by being blind, the good God prepare me!

Fortunately for Pepys and for the British Navy, his fears were not realized. He was able to give another fifteen years of conscientious and devoted service to his King and country, and his final departure from office at

at the age of fifty-five years was due not to failure of health, but to dismissal by the new régime. Following the revolution of 1688, James II fled to France on December 23 of that year, and on March 9, 1689, Pepys was ordered to hand over all his books *et cetera* to his successor.

Even while in office and enjoying the complete confidence of his royal masters, Pepys had his trials as well as his triumphs. As Clerk of the Acts of the Navy he held an office of high responsibility, on equality with the other commissioners, of whom Sir William Coventry, Lord Brouncker, Sir William Penn, Sir William Batten, Sir John Minnes and Sir George Carteret are mentioned again and again in the diary. After the disastrous Dutch War concluded by the Peace of 1667, when the Dutch had actually sailed into the Thames, a great outcry arose against the principal administrative officers of the Navy, and for months Pepys and his colleagues were the subject of bitter denunciation. Finally it was decided that they should be called to give an account of their stewardship at the Bar of the House of Commons, and Pepys, the man who had everything at his finger-ends, had to prepare the defence. On March 5, 1667-68, he spoke for three hours before a crowded House, to such effect that the matter was dropped. Pepys himself gives a graphic account of the episode:

... I did huddle the best I could some more notes for my discourse today, and by nine o'clock was ready, and ... by boat ... to Westminster, where I found myself come time enough, and my brethren all ready. But I full of thoughts and trouble touching the issue of this day; and, to comfort myself, did go to the Dog and drink half-a-pint of mulled sack, and in the Hall (Westminster) did drink a dram of brandy at Mrs. Hewlett's; and with the warmth of this did find myself in better order as to courage, truly. So we all up to the lobby; and between eleven and twelve o'clock, were called in, with the mace before us, into the House, where a mighty full House; and we stood at the bar, namely Brouncker, Sir J. Minnes, Sir T. Harvey, and myself, W. Pen being in the House, as a Member. I perceive the whole house was full, and full of expectation of our defence what it would be, and with great prejudice. After the Speaker had told us the dissatisfaction of the House, and read the Report of the Committee, I began our defence most acceptably and smoothly, and continued at it without any hesitation or losse, but with full scope, and all my reason free about me, as if it had been at my own table, from that time till past three in the afternoon; and so ended, without any interruption from the Speaker; but we withdrew. And there all my Fellow-Officers, and all the world that was within hearing, did congratulate me, and cry up my speech as the best thing they ever heard; and my Fellow-Officers overjoyed in it; we were called in again by and by to answer only one question, touching our paying tickets to ticket-mongers; and so out; ...

Pepys attained great renown for this speech and was congratulated on all hands from the King downwards.

Soon after the completion of his diary Pepys obtained leave of absence from the Duke of York, his immediate chief, and, with his wife, went on a tour of France and Holland. Immediately after their return to London, Mrs. Pepys became seriously ill. Writing on November 2 to his friend and brother diarist, John Evelyn, Pepys says:

I beg you to believe that I would not have been ten days returned into England without waiting on you had it not pleased God to afflict me by the sickness of my wife, who, from the first day of her coming back to London, hath lain under a fever so severe as at this hour to render her recoverie desperate.

She died on November 10, 1669, aged but twenty-nine years. Pepys erected to her memory a beautiful memorial on the north wall of the chancel of their church, St. Olave, Hart Street, in the form of a white marble bust of Mrs. Pepys, standing prominently out from a black marble background, and looking down and across the church in the direction of the gallery where Pepys and the other officers of the Navy had their pew.

In 1673, Pepys was promoted to the office of Secretary of the Admiralty, a post which he held at this time for six years. During this period, while he was busily occupied with the rebuilding of the fleet and enjoying the complete

confidence of his sovereign, enemies—political and other—were at work in an endeavour to compass his downfall. Although a diligent church-goer and loyal son of the Church of England, Pepys came under suspicion of being a papist and suffered much in consequence. His political opponents were not slow to seize this opportunity of doing him an injury, and they endeavoured to make use of these rumours to prevent his election to the House of Commons. He had been elected Member of Parliament for Castle Rising in Norfolk in November, 1673, but on the petition of his unsuccessful opponent, the Committee of Privileges declared the election void. However, as Parliament was prorogued before they had an opportunity to vote on the committee's finding, Pepys was allowed to retain his seat.

As a result of further machinations on the part of his enemies, on May 22, 1679, Pepys was committed to the Tower, along with Sir Anthony Deane, the ship-builder, on a charge of treason. He was accused of having betrayed naval secrets to the French and of various anti-protestant activities. Finally the prisoners were released on bail of no less a sum than £30,000. The charges against them were not substantiated, but it was not until February, 1679-80, that they were relieved from their bail. Prior to his imprisonment Pepys had resigned his Secretaryship to the Navy and lived in retirement for five years. He continued in favour at Court during this time, and in 1682 he accompanied the Duke of York on a voyage to Scotland, when he narrowly escaped shipwreck. The Duke's ship foundered on a sandbank 16 leagues from the mouth of the Humber and many were drowned. Pepys, however, had elected to travel on his own yacht and escaped the catastrophe. As a Scot, one regrets greatly that Pepys was no longer keeping a diary at this time. The observations of a man of such infinite curiosity would no doubt have provided something at least as interesting as Dr. Johnson's journal of his tour to the Hebrides. Pepys had no love for the Scots, and I have little doubt that we of that race should have had some home truths to chew on.

In the parliamentary election of May, 1685, both Harwich and Sandwich chose Pepys, once more Secretary of the Admiralty, as their member and he decided to serve for Harwich, but when the Convention Parliament of 1689-90 was summoned following the Revolution, Harwich refused to elect him. He had been too long the close friend and faithful officer of the deposed monarch to suit their taste, and even his unjust imprisonment in the Tower ten years before was brought up against him.

In June of the following year he was committed to the Gatehouse at Westminster on a renewed charge of betraying naval secrets to the French. Once again this charge was not substantiated, and at the end of July he was allowed to return home, partly at least on account of his health. It was not until October that he was once more a free man, but even two years later he was still in fear of further persecution.

While the Navy was Pepys's great and abiding passion, that to which he devoted his life, he had numerous outside interests. He was a Fellow and later President of the Royal Society, Master of Trinity House in 1676 and again in 1685, and in 1677 Master of the Clothworkers Company. In 1699 he was presented with the freedom of the city of London, having already been made a freeman of both Portsmouth and Newcastle-on-Tyne.

After his retirement he published, in 1690, his valuable "Memoirs of the Navy", but his great projected work on the history of the Navy from the earliest times got only as far as the collection of many volumes of data—"Navalia" as he styled them.

"He continued", writes Wheatley, "to keep up an extended correspondence with his many friends, and as Treasurer of Christ's Hospital he took a very great interest in the welfare of that institution." Meanwhile, as the government of William and Mary "became more firmly established and the absolute absurdity of the idea of his disloyalty was proved, Pepys held up his head again as a man to be respected and consulted, and for the remainder of his life he was looked upon as the Nestor of the Navy".

He died on May 26, 1703, at the house in Clapham where for the last few years of his life he had lived with his faithful friend and former clerk, William Hewer.

The esteem in which Pepys was held by those who knew him cannot be better exemplified than by the entry which John Evelyn made in his dairy on the day of his death:

May 26th, 1703. This day died Mr. Sam Pepys, a very worthy, industrious, and curious person, none in England exceeding him in knowledge of the navy, in which he had passed thro' all the most considerable offices, Clerk of the Acts and Secretary of the Admiralty, all which he performed with great integrity. When K. James II went out of England, he laid down his office, and would serve no more, but withdrawing himself from all public affaires, he liv'd at Clapham with his partner Mr. Hewer, formerly his clerk, in a very noble and sweete place, where he enjoy'd the fruits of his labours in greatae prosperity. He was universally belov'd, hospitable, generous, learned in many things, skilled in music, a very greatae cherisher of learned men of whom he had the conversation.

His body was buried in the Church of Saint Olave, Hart Street, on June 5, beside that of his wife and brother in a vault of his own making. It is a remarkable fact that no memorial of Pepys was erected until the lapse of nearly 200 years from the date of his death. Then on March 18, 1884, mainly as the result of the efforts of that great Pepysian, Henry Benjamin Wheatley, a monument by Sir Alfred Blomfield was unveiled by Russell Lowell, the American Ambassador, under the site of the gallery in which Pepys formerly sat. At the present moment you will look in vain for these memorials of Samuel and Elizabeth Pepys in the Church of Saint Olave, Hart Street, which stands an empty, roofless shell, melancholy victim of the bombing of London.

Pepys bequeathed his library, including his diary, to Magdalene College, Cambridge, where he had been an undergraduate, and by a very astute device made sure, in so far as he could, that it should be kept intact and well looked after. The passage in his will is well worthy of quotation. After giving precise instructions about the disposal of the library, which he bequeathed to either Trinity or Magdalene, but preferably the latter, he adds:

That before my said Library be put into the possession of either of the said colleges, that college for which it shall be designed, first enter into covenants for performance of the foregoing articles. And that for a yet further security herein, the said two colleges of Trinity and Magdalene have a reciprocal check upon one another; and that college which shall be in present possession of the said Library, be subject to an annual visitation from the other, and to the forfeiture thereof to the like possession and use of the other, upon conviction of any breach of the said covenants.

The library, I need hardly say, is still at Magdalene, beautifully housed in a special room according to the terms of the will, the books actually in the very cases and in the order in which Pepys left them. Nor is it necessary to add that the collection is jealously guarded.

The diary, as I have said, covers the period from January 1, 1660-61, to May 31, 1669. When it opens, he and his wife, with their maid Jane, are living in Axe Yard, Westminster, a site now covered by government offices. As a clerk in Mr. Downing's office, Pepys has the modest salary of £50 a year, with rather insecure tenure, and altogether he is a person of little importance. His appointment as Clerk of the Acts of the Navy a few months later was a tremendous step up. It was a post of great responsibility, which brought him into immediate and direct contact with many of the foremost men of the day, and carried with it not only a salary of £350 a year and an official residence, but abundant opportunity for the acquisition of wealth by methods now largely discredited.

The Navy Office at this time was situated in the East End of the city close by Tower Hill, and the houses of the principal officers surrounded the courtyard and gardens in which it stood. Here Pepys had for neighbours Sir William Penn and Sir William Batten, two of his fellow commissioners. With these two and their respective families Pepys and his wife lived in more or less friendly intimacy

during the years of the diary, but there were occasional periods of difficulty, and both colleagues are frequently castigated by Pepys in the privacy of his chamber and diary. Contrast, for example, these passages:

January 4, 1661-62:

I and my wife to Sir W. Pen's to cards and supper, and were merry, and much correspondence there has been between our two families all this Christmas.

March 8, 1665-66:

Up betimes to the office, where all the morning sitting, and did discover three or four fresh instances of Sir W. Pen's old cheating dissembling tricks, he being as false a fellow as ever was born.

February 21, 1666-67:

Up, and to the office, where sat all the morning, and there a most furious conflict between Sir W. Pen and I, in few words, and on sudden occasion, of no great moment, but very bitter, and stared on one another, and so broke off, and to our business, my heart as full of spite as it could hold, for which God forgive me and him!

Next day he and Mrs. Pepys are among a large number of guests at Sir W. Penn's house:

It is instead of a wedding dinner for his daughter, whom I saw in palter clothes, nothing new but a bracelet that her servant [her fiancé] had given her, and ugly she is, as heart can wish. A sorry dinner, not anything handsome or clean, but some silver plates they borrowed of me. So a great deal of talk, and I seemingly merry, but took no pleasure at all. We had favours given us all, and we put them in our hats, I against my will, but that my Lord (Brouncker) and the rest did.

Both Penn and Batten were seamen of acknowledged ability and must have possessed an infinitely greater practical knowledge of naval matters than Pepys. Pepys admits freely Penn's great abilities as a naval administrator, while expressing with even greater freedom his personal dislike of him. Sir William Penn was the father of William Penn the Quaker and colonist, and it was in consideration of the King's great obligation to his father that William Penn obtained the grant of land in North America. William had intended to call his province Sylvania, but Charles II insisted that it should be Pennsylvania.

On the other side of Seething Lane from Pepys's house, and within a stone's throw of his door, stood the little fifteenth century church of Saint Olave, Hart Street, of which Pepys and his wife were members. Pepys was a great sermon-taster, and his critical comments on both sermon and preacher are often most amusing.

To Church, where a dull doctor, a stranger, made a dull sermon.

... to Church, ... and to my great joy find Mr. Frampton in the pulpit; so to my great joy I hear him preach, and I think the best sermon, for goodness and oratory, without affectation or study, that ever I heard in my life. The truth is, he preaches the most like an apostle that ever I heard man; and it was much the best time that ever I spent in my life in church.

... to Whitehall ... to chapel, where ... I heard ... one Mr. Floyd preach ... and did it very handsomely and excellent stile; but was a little overlarge in magnifying the graces of the nobility and prelates, that we have seen in our memory in the world, whom God hath taken from us.

So to church, where a vain fellow with a periwig preached.

Up to church, where ... Mr. Mills made a sorry sermon to prove that there was a world after this.

So to church and slept all the sermon, the Scot, to whose voice I am not to be reconciled, preaching.

The outstanding event of medical interest referred to in the diary is, of course, the great plague of London, which occurred in the summer and autumn of 1665. References to the plague are numerous and often dramatic, and it is possible to obtain from them some idea of the upset to public and private life that the pestilence entailed. That it was bubonic plague there can be little doubt, and in view of the extent of rat infestation in London at that time, the state of sanitation, and the habits and customs of the people, it is not surprising that, once established, the disease speedily assumed epidemic proportions. The

earliest reference to the plague appears to be that of April 30, 1665.

Great fears of the sickness here in the City, it being said that two or three houses are already shut up. God preserve us all!

Five weeks later, on June 7, he writes:

This day, much against my will, I did in Drury Lane see two or three houses marked with a red cross upon the doors, and "Lord have mercy upon us" writ there; which was a sad sight to me, being the first of that kind that, to my remembrance, I ever saw. It put me into an ill conception of myself and my smell, so that I was forced to buy some roll tobacco to smell to and chaw, which took away the apprehension.

Three days later Pepys got a rude shock:

In the evening home to supper; and there to my great trouble, hear that the plague is come into the City (though it hath these three or four weeks since its beginning been wholly out of the city); but where should it begin but in my good friend and neighbour's, Dr. Burnett, in Fanchurch Street; which in both points troubles me mightily.

It was Dr. Burnett's servant who had been smitten with the plague, causing the doctor's house to be quarantined. On July 22, some six weeks later, Pepys writes:

I met this noon with Dr. Burnett, who told me, and I find in the news book this week that he posted upon the 'Change, that whoever did report that, instead of the plague, his servant was by him killed, it was forgery, and shewed me the acknowledgment of the master of the pest-house, that his servant died of a bubo on his right groin, and two spots on his right thigh, which is the plague.

The story is continued on August 25, five weeks later:

This day I am told that Dr. Burnett, my physician, is this morning dead of the plague; which is strange, his man dying so long ago, and his house this month open again. Now himself dead. Poor unfortunate man.

A clue to this unhappy *dénouement* is perhaps afforded by a passage from a letter of J. Tillison to Dr. Sancroft, dated September 14, 1665, and quoted by Wheatley:

Dr. Burnett, Dr. Glover, and one or two more of the College of Physicians, with Dr. O'Dowd, which was licensed by my Lord's Grace of Canterbury, some surgeons, apothecaries, and Johnson, the chemist, died all very suddenly. Some say (but God forbid that I should report it for truth) that these, in a consultation together, if not all, yet the greatest part of them, attempted to open a dead corpse which was full of the tokens; and being in hand with the dissected body, some fell down dead immediately, and others did not outlive the next day at noon.

Pepys not infrequently quotes from the London weekly "Bills of Mortality", that great precursor of the Registrar-General's reports, to which, even to this day, medical statisticians turn for invaluable information. In the week ending June 5, 1665, Pepys notes that 43 persons died of the plague, next week 112, and the week after that 267. The number of fatal cases rose rapidly to a maximum, in the week ending September 19, of no less a figure than 7165. The descent of the curve was at first equally rapid, but it tailed off into 1666, when the great fire of London was to follow on its heels and sweep away a large part of the medieval city. The total number of burials in London in 1665 was 97,506, and of these, deaths due to the plague are said to have accounted for no fewer than 68,596.

It is not surprising that Pepys viewed the plague with much apprehension, and he was especially disturbed if business or pleasure prevented him from returning to his lodgings before dark, lest this should cause him to meet a corpse being taken for burial. On July 3 he resolves:

... from this night forwards to close all my letters, if possible, and end all my business at the office by daylight, and I shall go near to do it and put all my affairs in the world in good order, the season growing so sickly, that it is much to be feared how a man can escape having a share with others in it, for which the good Lord God bless me, or to be fitted to receive it.

By June 26 he had decided to send his wife to Woolwich for safety. The exodus from London was already well under way. He writes on June 21, 1665:

all the towne almost going out of towne, the coaches and waggon being all full of people going into the country.

On July 5 Mrs. Pepys and her two maids took up their residence as boarders in the home of one Mr. Sheldon, in Woolwich, "and very prettily accommodated they will be", writes Pepys. A maid had been left in charge of their house in Seething Lane. The Navy Office itself was transferred to Greenwich in September, returning to London only in January, 1665-66.

Pepys recounts many intriguing episodes relating to the plague, including the following, of a gallant who, bent on an amour, encountered more than he had bargained for. A maid-servant, who had sickened of the plague and who was being taken to a pest-house in one of the coaches, with the curtains close drawn, met in a narrow lane Sir Anthony Browne with his brother and some friends.

The brother, being a young man, and believing there might be some lady in it that would not be seen, and the way being narrow, he thrust his head out of his own into her coach, and to look, and there saw somebody look very ill, and in a sick dress, and stunk mightily; which the coachman also cried out upon. And presently they come up to some people that stood looking after it, and told our gallants that it was a mayde of Mr. Wright's carried away sick of the plague; which put the young gentleman into a fright, had almost cost him his life, but is now well again.

Again, on September 3 we find the following interesting sidelight:

Up; and put on my coloured silk suit very fine, and my new periwig, bought a good while since, but durst not wear, because the plague was in Westminster when I bought it; and it is a wonder what will be the fashion after the plague is done, as to periwiggs, for nobody will dare to buy any haire for fear of the infection, that it had been cut off the heads of people dead of the plague.

By September 14, 1665, the plague for the first time had begun to show signs of abating, and Pepys notes that the preceding week had shown a decrease of over 500 in the number of deaths. None the less the entry in the diary for this date is an anxious one and gives some idea of the state of mind in which most of the inhabitants of London must have been at that time.

Then, on the other side, my finding that though the Bill in general is abated, yet the City within the walls is increased, and likely to continue so, and is close to our house there. My meeting dead corpses of the plague, carried to be buried close to me at noon-day through the City in Fanchurch Street. To see a person sick of the sores, carried close by me by Gracechurch in a Hackney coach. My finding the Angell tavern at the lower end of Tower-hill, shut up, and more than that, the alehouse at the Tower-stairs, and more than that, the person was then dying of the plague when I was last there, a little while ago, at night, to write a short letter there, and I overheard the mistress of the house sadly saying to her husband somebody was very ill, but did not think it was of the plague. To hear that poor Payne, my waiter, hath buried a child, and is dying himself. To hear that a labourer I sent but the other day to Dagenhams, to know how they did there, is dead of the plague; and that one of my own watermen, that carried me daily, fell sick as soon as he had landed me on Friday morning last, when I had been all night upon the water (and I believe he did get his infection that day at Brainford), and is now dead of the plague.

But the worst was not yet over, for on September 20 Pepys writes:

But Lord! What a sad time it is to see no boats upon the River; and grass grows all up and down White Hall court, and nobody but poor wretches in the street! And, which is worst of all, the Duke [of Albermarle] showed us the numbers of the plague this week, brought in the last night from the Lord Mayor; that it is increased about 600 more than the last, which is quite contrary to all our hopes and expectations, from the coldness of the late season. For the whole general number [the week's deaths] is 8,297, and of them the plague 7,165, which is more in the whole by above 50, than the biggest Bill yet; which is very grievous to us all.

Pepys's fears were not lessened by his well-founded suspicion that the weekly bills of mortality were inaccurate. He wrote on August 30:

abroad and met with Hadley, our Clerk [presumably the parish clerk], who, upon my asking how the plague goes, he told me it increases much, and much in our parish; for, says he, there died nine this week, though I have returned but six; which is a very ill practice, and makes me think it is so in other places; and therefore the plague much greater than people take it to be.

Pepys was elected a Fellow of the Royal Society, or College of Virtuosos, as he called it, in February, 1664-65, and was a regular attender at its meetings. He was president from 1684 to 1686. At its inception in 1645 this august body consisted of a group of scientific men who met informally, first in London and then, during the greater part of the Commonwealth, in Oxford. The meetings were resumed in London in 1660 and were held in Gresham College, Basinghall Street, but it was not until 1662 that Charles II granted their charter of incorporation.

Pepys's taste for the remarkable and extraordinary, as well as for things of medical interest, was well catered for at the meetings of this society. At one meeting, when he was not present, there was carried out what must have been one of the earliest blood-transfusion experiments. He heard all about it from Dr. Croone, however, the same evening. On November 14, 1666, he wrote:

there was a pretty experiment of the blood of one dogg let out, till he died, into the body of another on one side, while all his own run out on the other side. The first died upon the place, and the other very well, and likely to do well. This did give occasion to many pretty wishes, as of the blood of a Quaker to be let into an Archbishop, and such like; but as Dr. Croone says, may, if it takes, be of mighty use to man's health, for the amending of bad blood by borrowing from a better body.

Two days later he notes:

This noon I met with Mr. Hooke, and he tells me the dog which was filled with another dog's blood, at the College the other day, is very well, and like to be so as ever, and doubts not its being found of great use to men . . .

A year later we find the experiments being carried a stage further:

21st Nov., 1667 . . . From this we fell to other discourse, and very good; among the rest they discourse of a man that is a little frantic, that hath been a kind of minister . . . that is poor and a debauched man, that the College have hired for 20s. to have some of the blood of a sheep let into his body; and it is to be done on Saturday next. They purpose to let in about 12 ounces; which they compute, is what will be let in in a minute's time by a watch. They differ in the opinion they have of the effects of it; some think it may have a good effect on him as a frantic man by cooling his blood, others that it will not have any effect at all. But the man is a healthy man, and by this means will be able to give an account what alteration, if any he do find in himself, and so may be useful . . . Dr. Whistler told a pretty story . . . of Dr. Caius, that built Keys College; that being very old, and living only at that time on woman's milk, he, while he fed upon the milk of an angry fretful woman, was so himself; and then, being advised to take it of a good-natured, patient woman, he did become so, beyond the common temper of his age.

The transfusion experiment above mentioned was carried out on November 23, and on November 30 Pepys writes:

Much of good discourse we had [among the Fellows of the Royal Society]. But here above all, I was pleased to see the person who had blood taken out. He speaks well, and did this day give the Society a relation thereof in Latin, saying that he finds himself much better since, and as a new man, but he is cracked a little in his head, though he speaks very reasonably and very well. He had but 20s. for his suffering it, and is to have the same again tried upon him: the first sound man that ever had it tried on him in England, and but one that we hear of in France, which was a porter hired by the virtuosos.

On March 26, 1658, two years before the commencement of the diary, Pepys was successfully "cut for the stone" by Thomas Hollier, surgeon to Saint Thomas's Hospital. A large vesical calculus was removed, and from subsequent remarks in his diary it would seem that he had completely recovered from the operation by May 1 following. Pepys kept his stone as an exhibition specimen, but it was not until August, 1664, that he had a case specially made to contain it.

27th August, 1664. Thence to my case-maker for my stone case and had it to my mind, and cost me 24s., which is a great deale of money, but it is well done and pleases me.

On a later occasion Pepys endeavoured unsuccessfully to make practical use of this exhibit, for the following entry is found in the diary of John Evelyn under the date of June 10, 1669:

I went this morning to London, to carry Mr. Pepys to my brother Richard, now exceedingly afflicted with the stone, who had been successfully cut, and carried the stone, as big as a tennis ball, to show him, and encourage his resolution to go through the operation.

Their efforts, however, were unavailing, and the poor man died of his disease on March 6 following. On March 3 Evelyn records:

My brother Richard (is) in such exceeding torture that he began to fall into convulsion fits, he being all along averse from being cut; but, when he at last consented, and it came to the operation, and all things prepared, his spirit and resolution failed him.

After his death his body was opened and a stone not much bigger than a nutmeg taken out of his bladder.

"Cutting for the stone" was probably one of the "show" operations of those days. When Evelyn, who, of course, was a layman, was in Paris in 1650, he saw the operation of lithotomy performed at *La Charite*.

A child of eight or nine years old underwent the operation with most extraordinary patience, and expressing great joy when he saw the stone was drawn. The use I made of it was to give Almighty God hearty thanks that I had not been subject to this deplorable infirmity.

Pepys continued to have occasional trouble during the period of the diary, partly from recurrence, partly, it would appear, from cystitis. He had several atypical attacks of renal colic, and on March 7, 1664-65, he passed two small stones.

When he died in 1703, his nephew and heir, John Jackson, conveyed the news by letter to his old friend Evelyn. In one passage he writes:

I must not omit acquainting you, sir, that upon opening his body (which the uncommonness of his case required of us, for our own satisfaction as well as public good), there was found in his left kidney a nest of no less than seven stones, of the most irregular figures your imagination can frame, and weighing together four ounces and a half, but all fast linked together, and adhering to his back; whereby they solve his having felt no greater pains upon motion, nor other of the ordinary symptoms of the stone.

Pepys, whenever possible, celebrated in festive style the anniversary of his cutting for the stone. On March 6, 1659-60, he wrote:

And did resolve while I live to keep it a festival, as I did the last year at my house, and for ever to have Mrs. Turner and her company with me.

When this was written, on the second anniversary, Pepys was at sea with the fleet; but even so:

At night Mr. Shepley and W. Howe came and brought some bottles of wine and some things to eat in my cabin, where we were very merry, remembering the day of being cut for the stone.

As an instance of the handsome way in which he entertained his guests on these occasions, see the entry for March 26, 1662:

Up early. This being, by God's great blessing, the fourth solemn day of my cutting for the stone this day four years, and am by God's mercy in very good health, and like to do well, the Lord's name be praised for it. . . . At noon come my good guests, Madame

Turner [in whose house the operation had been carried out], The, Cozen Norton, and . . . Mr. Lewin . . . I had a pretty dinner for them, viz., a brace of stewed carps, six roasted chickens, and a jowl of salmon hot for the first course; a tanzy and two neat's tongues, and cheese the second, and were very merry all the afternoon, talking and singing and piping upon the flageolette. In the evening they went with great pleasure away, and I with great content and my wife walked half an hour in the garden, and so home to supper and to bed.

It is to be feared that Pepys had not that complete faith in the abilities of the Faculty that his own earlier experience might have justified. He sought advice from all quarters, and he tried many fearful and wonderful remedies. For long he carried about with him a hare's foot, for the purpose of warding off attacks of colic. When, however, it proved unsatisfactory, he discussed the matter with a friend, with this result (January 20, 1664-65):

So homeward, in my way buying a hare and taking it home, which arose upon my discourse to-day with Mr. Batten, in Westminster Hall, who showed me my mistake that my hare's foot hath not the joynit to it; and assures me he never had his choliqie since he carried it about with him: and it is a strange thing how fancy works, for I no sooner almost handled his foot but my belly began to be loose and to break wind, and whereas I was in some pain yesterday and tother day and in fear of more today, I became very well, and so continue.

He notices, as many others have done, that he tends to dyspeptic when he dines alone:

Late up at my papers, and weary and full of wind, finding perfectly that so long as I keep myself in company at meals and do there eat lustily (which I cannot do alone, having no love to eating, but my mind runs on business) I am as well as can be, but when I come to be alone I do not eat in time, nor enough, nor with any good heart, and I immediately begin to be full of wind which brings me pain, till I come to fill my belly again.

There are many other references to Pepys's own illnesses and those of his wife, but time does not allow of further quotation.

Pepys took the most intense interest in all medical matters that came under his notice. He was intimate with most of the well-known physicians and surgeons of his day—Sir George Ent, Dr. Goddard, Sir Alexander Frazier (physician to the King), Sir Charles Scarborough (the friend of Harvey), and many more. He eagerly avails himself of their conversation and frequently puts down an account of what he has heard.

From Dr. Timothy Clerke he hears all about Prince Rupert's illness and operation, apparently tréphining for syphilitic cario-necrosis of the skull. On January 28, 1666-67, he writes:

Here I hear from Mr. Hayes that Prince Rupert is very bad still, and so bad, that he do now yield to trepanned. It seems, as Dr. Clerke also tells me, it is a clap of the pox which he got about 12 years ago, and hath eaten to his head and come through his skull, so his scull must be opened, and there is great fear of him.

Six days later, on February 3, he writes:

. . . I with others into the House, and there hear that the work is done to the Prince in a few minutes without any pain at all to him, he not knowing when it was done. It was performed by Moulins. Having cut the outward table, as they call it, they find the inner all corrupted, so as it come out without any force; and their fear is, that the inside of his head is corrupted like that . . . but no ill accident appeared in the doing of the thing, but all with all imaginable success, as Sir Alexander Frazier did tell me himself.

The operation appears to have been most successful, for on April 3 following, Pepys saw Prince Rupert abroad again, "pretty well as he used to be, and looks as well, only something appears to be under his periwig on the crown of his head". It is perhaps worthy of note, in these days of surgical statistics and follow-up systems, that Prince Rupert survived the operation fifteen years—a very creditable result.

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ried . I wed hot ues, the the great wife to with eri- all ful re's men, better ing with my it; he ing his peak and ery to and in ind in I nor be my ses her cal ate of der gh il an ce for 28, is be is go, ill, ar at h- it ut er ed ng ir or and ill, the se at

It is, alas! too often from the Court physicians and surgeons that Pepys gets his information about Court intrigues, and especially about the current relations of the King with his wife and his various mistresses. Pepys listens to it all with gusto, and down it goes in the diary in full detail.

He is always on the lookout for the remarkable and the extraordinary. One day (November 11, 1664) he is told of:

... a monster born of an hostler's wife at Salisbury, two women children perfectly made, joyned at the lower part of their bellies, and every part perfect as two bodies, and only one payre of legs coming forth on one side from the middle where they were joined. It was alive 24 hours, and cried and did as all hopefull children do; but, being shewed too much to people, was killed.

On another occasion (July 25, 1664):

... to my barber Gervas, who this day buries his child, which it seems was born without a passage behind, so that it never voided any thing in the week or fortnight that it has been born.

Many other sidelights on the medicine of the period are afforded by the diary. On February 27, 1662-1663, Pepys and his naval colleague Commissioner Pett paid a visit to the Barber-Surgeons' Hall:

... (We being all invited thither, and promised to dine there); where we were led into the theatre; and by and by comes the reader, Dr. Tearne, with the Master and Company, in a very handsome manner: and all being settled, he began his lecture, this being the second upon the kidneys, ureters, etc., which was very fine; and his discourse being ended, we walked into the Hall, and there being great store of company, we had a fine dinner and good learned company, many Doctors of Physique, and we used with extraordinary great respect. Among other observables we drank the King's health out of a gilt cup given by King Henry VIII to this Company, with bells hanging at it, which every man is to ring by shaking after he hath drunk up the whole cup. . . . After dinner Dr. Scarborough took some of his friends, and I went along with them, to see the body alone, which we did, which was a lusty fellow, a seaman, that was hanged for a robbery. I did touch the body with my bare hand: it felt cold, but methought it was a very unpleasant sight. It seems one Dillon, of a great family, was, after much endeavours to have saved him, hanged with a silken halter this Sessions (of his own preparing), not for honour only, but it seems, it being soft and sleek, it doth slip close and kills, that is, strangles presently: whereas, a stiff one do not come so close together, and so the party may live the longer before killed. But all the Doctors at table conclude, that there is no pain at all in hanging, for that it do stop the circulation of the blood; and so stops all sense and motion in an instant. Thence we went into a private room, where I perceive they prepare the bodies, and there were the kidneys, ureters (etc.), upon which he read today, and Dr. Scarborough upon my desire and the company's did show very clearly the manner of the disease of the stone and the cutting and all other questions that I could think of . . . how the water (comes) into the bladder through the three skins or coats just as poor Dr. Jolly has heretofore told me. Thence with great satisfaction to me back to the Company, where I heard good discourse, and so to the afternoon Lecture upon the heart and lungs, etc., and that being done we broke up, took leave, and back to the office. . . .

Well might Evelyn call Pepys "a very curious person". There appears to be almost nothing in which he does not, at some time or another, express his deep and keen interest; there is almost nothing he does but he does it with enthusiasm. I should like to conclude this address with a brief quotation from Robert Louis Stevenson's essay on Pepys in his "Familiar Studies of Men and Books":

Wherever he went, his steps were winged with the most eager expectation; whatever he did, it was done with the most lively pleasure. An insatiable curiosity in all the shows of the world, and all the secrets of knowledge, filled him brimful of the longing to travel, and supported him in the toils of study. . . . We find him, in a single year, studying timber and the measure-

ment of timber; tar and oil, hemp, and the process of preparing cordage; mathematics and accounting; the hull and the rigging of ships from a model; and "looking and informing himself of the [naval] stores with" . . . hark to the fellow! . . . "great delight!" He is only copying something, and behold, he "takes great pleasure to rule the lines, and to have the capital words wrote with red ink"; he has only had his coal-cellar emptied and cleaned, and behold, "it do please him exceedingly". A hog's harslett is "a piece of meat he loves". He cannot ride home in my Lord Sandwich's coach, but he must exclaim, with breathless gusto, "His noble, rich coach". When he is bound for a supper-party, he anticipates a "glut of pleasure". When he has a new watch, "to see my childishness", says he, "I could not forbear carrying it in my hand and seeing what o'clock it was an hundred times". To go to Vauxhall, he says, and "to hear the nightingales and other birds, hear fiddles, and there a harp and here a Jew's trumpet, and here laughing and there fine people walking, is mighty diverting".

Whether Joseph Bancroft had read Pepys's diary—in his lifetime only the Braybrook edition would be available to him—I do not know. Like Pepys, he must have been a man of "infinite curiosity", and we can well imagine how Pepys would have revelled in his many and varied researches and discoveries—his attempts to grow a rust-resistant wheat, the culture of oysters, the invention and preparation of Australian pemmican, his inquiries into the life history of animal parasites, to mention but a few examples.

The result which I confidently hope and anticipate from this oration is that many of you will be stimulated to read (or reread) your Pepys for yourselves, and in particular Wheatley's great edition, the three India-paper volumes of which are fortunately still available in the bookshops. If this should prove to be so, I shall feel that my rather unorthodox choice of subject for this oration will have been amply justified.

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#### A DESCRIPTION OF TWO TYPES OF HÆMOPHILIA AND CRITERIA FOR THE DIAGNOSIS OF HÆMOPHILIA.<sup>1</sup>

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FIVE years ago a long-term investigation of hæmophilia was commenced. The object was to evaluate the apparent phasic nature of the bleeding episodes and to determine the efficacy of blood transfusion and certain other forms of therapy, particularly the use of di-iodo compounds.

During the progress of this work it was noted that true hæmophiliacs are divided into two types, both of which can be readily recognized. Differentiation and diagnosis of these types form the basis of this article.

The selection of known hæmophiliacs in Sydney was made through the records departments of several of the major hospitals. All these subjects have required frequent admissions to hospital for the treatment of bleeding episodes. They did not exhibit thrombocytopenic manifestations nor did they suffer from any other blood dyscrasia. As a primary consideration it was required that they fulfil the criteria for the laboratory diagnosis of hæmophilia which are set out below.

After the clinical picture, family history and history of previous bleeding episodes had been obtained from each patient, laboratory tests were performed to confirm the diagnosis of hæmophilia, and patients were requested to attend the clinic at regular intervals. It was stressed that

<sup>1</sup> This work was carried out with the aid of a grant from the National Health and Medical Research Council.

during any haemorrhagic episode continuous contact would have to be maintained when any form of therapy had to be given. If hospital admission was needed, treatment was carried out in the Surgical Professorial Unit at the Royal Prince Alfred Hospital.

A total of 49 haemophiliacs have been investigated and some 200 separate haemorrhagic episodes recorded. All these haemorrhages caused some degree of incapacity. Episodes of a minor nature causing little discomfort have not been tabulated. Blood transfusion was always given when any critical state developed or when exsanguination made its administration imperative. Apart from such conditions, when organic di-iodo compounds were administered, blood transfusion was not ordered, except in control experiments.

A family history of haemophilia was frequently obtained. Owing to the genetically recessive nature of the transmission of haemophilia it is possible for the disease to appear sporadically. Such episodes of spontaneous haemophilia have been reported by Boggs (1934) and have been encountered during this investigation. Although several members of the immediate generation may be haemophiliacs, a family history of haemophilia has either been unobtainable through lack of knowledge of the forebears or perhaps because of reluctance of the parents to discuss previous disease in the family with their children. Results reported by Brinkhous and Graham (1950), who intermated haemophiliac dogs, indicate that haemophilia in the female dog is possible; but haemophilia in the human female has not been encountered in this series.

The majority of haemophiliacs under observation exhibit similar types of haemorrhagic episodes, and these can occur in most tissues of the body. They include such types of haemorrhage as melena, haematuria, haematemesis, haemarthroses, epistaxes, and subcutaneous and muscular haemorrhages, all of which may be traumatic or spontaneous in origin. In addition haemorrhage may follow lacerations or teeth extractions.

It was noted that a number of these haemophiliacs show no evidence of damage by haemarthroses, and two distinct types became evident in the clinical picture—namely, those who present intraarticular haemorrhages and those who do not. In addition, the laboratory findings, although confirming the diagnosis of haemophilia in both instances, show a differentiation in the prothrombin consumption time and the coagulation time in each type.

In the first type the haemorrhages already mentioned may occur, and the haemarthroses are most evident because of the crippling deformities which result from this type of haemorrhage. The laboratory tests in this type also present a uniform pattern, revealing an abnormal prothrombin consumption time which does not increase over a period of two hours, and unless certain forms of therapy are being given, the coagulation time usually ranges between 20 and 180+ minutes (method of Lee and White, 1913).

The second type of haemophiliacs, although experiencing haemorrhages from most other body tissues, do not suffer from haemarthroses. These haemophiliacs have an abnormal prothrombin consumption time, which differs from the prothrombin consumption time in the first type in that it increases slightly over a period of two hours. They also show a prolonged but not unduly prolonged clotting time, usually ranging between ten and thirty minutes.

#### Family History.

Investigation of the family history in both types of haemophilia usually gives positive results, although the greater percentage of those who exhibit haemarthroses have a more consistent family history of the disease.

In an analysis of the series of 49 haemophiliacs examined, 21 are of Type I and 22 of Type II, while the type of six children whose ages range from two to six years is uncertain. It is not possible for a complete laboratory examination to be made upon these children at present, and haemarthrosis is not apparent in any of them at the moment.

Table I illustrates the two types and their laboratory and clinical findings.

As evidence that the two types of haemophilia are not different and unassociated haemorrhagic disorders, a brief history of haemorrhagic episodes of two brothers and their two first cousins is cited below. Their family tree is shown in Figure I.

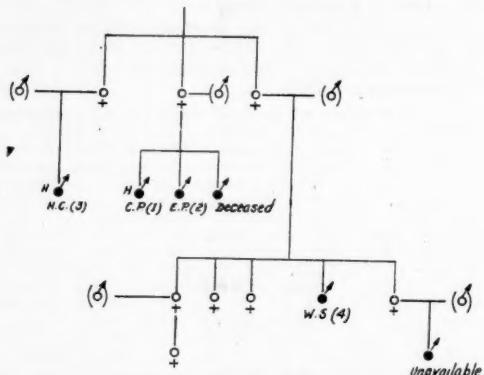


FIGURE I.

The family tree of the haemophilic patients (Cases I to IV) who exhibit the two types of haemophilia is shown above. The numbers in parentheses beside the patient's initials refer to the case number in the discussion above, and "H" beside the haemophiliac denotes that he suffers from haemarthrosis.

CASE I.—C.P., aged fifty-five years, brother to E.P. and first cousin to H.C. and W.S., has suffered from intra-articular hemorrhages at frequent intervals. Both knees, the left ankle and hip and the right thumb and wrist were the most often affected. The resultant deformities are apparent in ankle and hip. Until recently this patient has not been available for examination and has always received treatment in other hospitals. The patient relates that he has been subject to haemorrhagic episodes from most other tissues of the body with the notable exception of haematuria. Epistaxis and melena have been severe, and blood transfusion has been necessary on approximately twelve occasions. Lacerations and tooth extractions have caused severe and prolonged haemorrhage. His coagulation time is greater than twenty minutes and his prothrombin consumption time does not lengthen in two hours.

CASE II.—E.P., aged fifty-two years, brother to C.P. and first cousin to H.C. and W.S., has never been affected by haemarthroses. Laceration and tooth extraction, severe

TABLE I.  
Subdivision of Haemophilia.

| Type.   | Haemarthroses. | Other Haemorrhages. | Clotting Time Range. (Minutes.) | Prothrombin Consumption Time. <sup>1</sup> |                                |                                | Prothrombin Time. <sup>1</sup> (Seconds.) |
|---------|----------------|---------------------|---------------------------------|--|--------------------------------|--------------------------------|---|
|         |                |                     |                                 | 30 Minutes.                                | 60 Minutes.                    | 120 Minutes.                   |   |
| Type I  | ++             | ++                  | 20 to 180+<br>10 to 30          | 10 seconds<br>10 seconds                   | 10 seconds<br>10 to 12 seconds | 10 seconds<br>12 to 14 seconds | 13.5<br>13.5                              |
| Type II | ++             | ++                  |                                 |  |                                |                                |   |

<sup>1</sup> The thromboplastin suspension used throughout this investigation gave 13.5 seconds for normal prothrombin concentration (Quick's method).

subcutaneous and intramuscular haemorrhages, a sublingual hematoma and an infected hematoma have caused serious incapacity and required hospital admission. His coagulation time varies between ten and thirty minutes and his prothrombin consumption time lengthens slightly in one to two hours.

**CASE III.**—H.C., aged thirty-five years, a first cousin of the previous two patients, suffered his first haemarthrosis at the age of fourteen years as a result of kicking a football. Since that time he has had recurrent haemarthroses in other joints, including the shoulder, elbow, knee and hip joints. In addition to the haemarthroses, he has been subject to hemorrhagic episodes in most other tissues of the body. He is particularly subject to intramuscular haemorrhages. His coagulation time varies between thirty and one hundred and eighty minutes, and there is no change in his prothrombin consumption time over a period of two hours. The clotting time of recalcified plasma following high-speed and low-speed centrifugation (according to the method of Quick, 1941, 1942) is typical of haemophilia.

**CASE IV.**—W.S., aged sixty years, a first cousin, has exhibited all the symptoms of haemophilia without haemarthroses and has a consistent laboratory picture of the disease. The onset of hemorrhage was at the age of fifteen months, and has been followed by continuous hemorrhagic episodes both of traumatic and of spontaneous origin, including melena and hematuria, throughout his life. His coagulation time varies between ten and twenty minutes. His prothrombin consumption time lengthens slightly over a period of two hours. The clotting time of recalcified plasma following high-speed and low-speed centrifugation is typical of haemophilia.

#### Diagnosis.

In the diagnosis of this disease by laboratory examination the prothrombin consumption time has been found the most reliable diagnostic aid, provided that both the platelet count and the bleeding time are normal. Unless some form of therapy is being given the coagulation time is prolonged, sometimes greatly, sometimes to a moderate degree, but the type of bleeding episode and the amount of bleeding have not in our experience varied directly with an increase in the coagulation time.

#### Criteria for the Laboratory Diagnosis of Haemophilia.

The following are criteria for the laboratory diagnosis of haemophilia. (i) The coagulation time (Lee and White, 1913) is prolonged. (ii) The bleeding time (method of Duke, 1910) is normal. (iii) The prothrombin consumption time (method of Quick and Favre-Gilly, 1949) remains constant or increases slightly over a period of two hours. (iv) The platelet count is normal. (v) The coagulation time of recalcified plasma (Quick, 1942) is as follows: (a) high-speed centrifuging, over five minutes; (b) low-speed centrifuging, over three minutes; (c) the clotting time should decrease on standing. (vi) The prothrombin concentration (method of Quick, 1945) is normal. Allowances should be made when blood loss has decreased the prothrombin concentration. (vii) The accessory factor (factor V of Owren, 1947) should be present in normal concentration. (viii) Fibrinogen should be present in normal concentration.

Certain cases may be complicated by the presence of a circulating anticoagulant induced by frequent blood transfusion.

#### Clinical Picture.

All haemophiliacs under treatment are males, and the appearance of each is normal, except when joint deformities are evident. The disease first makes its appearance during early childhood, usually after trauma. Haemorrhage can be internal or external, traumatic or spontaneous. After teeth extractions haemorrhage is usual, while epistaxis and bleeding from a minor injury to the tongue may be alarming. Extensive bruising often follows slight knocks, and when the skin surface is lacerated subcutaneous extravasation of blood is often added to the picture of blood oozing from the wound.

Among the internal haemorrhages, sublingual and retroperitoneal hematomata cause more concern than bleeding into hollow viscera, although melena usually leads to

exsanguination more rapidly than hematuria. Intracranial haemorrhages have not been observed, but hematomata involving peripheral nerves may lead to paresis and other nerve complications.

All the haemophiliacs studied pass through stages at which they show a pronounced susceptibility to haemorrhage, and these episodes appear to be phasic in occurrence. During these times haemorrhages may be spontaneous or caused by trivial injury and may recur at frequent intervals. Between these stages the haemophiliacs appear to be free of such hemorrhagic episodes, as unnatural hemorrhage does not follow trauma.

#### Summary.

Forty-nine haemophilic patients have been examined over a period of five years. Haemophiliacs may be divided into two distinct types: those who exhibit haemarthroses and those who do not. The former have a consistently higher coagulation time than those who do not, and their prothrombin consumption time does not lengthen in two hours.

#### Acknowledgements.

We gratefully acknowledge the direction and assistance of Professor H. R. Dew, in whose department this work was carried out. We also acknowledge the technical assistance of Mr. M. Cullen, and would like to thank all the members of the staff of the Royal Prince Alfred Hospital for their ready cooperation and assistance.

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#### RESULTS OF SUBTOTAL GASTRECTOMY FOR PEPTIC ULCER: A REVIEW OF SIXTY CASES.

By GRAYTON BROWN,  
 Melbourne.

THE results of subtotal gastrectomy for peptic ulcer have improved so much in the last five years that it is considered that the mortality and morbidity rates in a series of 60 cases would be of use to medical practitioners interested in this condition.

There is no doubt that medical treatment can in most cases heal or control peptic ulceration which is not complicated. Surgery, however, carries the only hope of relief for patients with complicated ulcers or for those whose ulcers have not healed in spite of prolonged medical treatment.

It is impossible for one operator to have sufficient experience in all the various types of surgical operations recommended for peptic ulceration, but a review of the literature reveals that subtotal gastrectomy is still the most satisfactory procedure. Gastro-enterostomy has an extremely limited application—namely, in the treatment of very old patients with long-standing pyloric obstruction. Vagotomy, with or without gastro-enterostomy or pyloroplasty, is

followed by a higher incidence of discomfort or recurring ulceration than subtotal gastrectomy and must have only a temporary effect on the parasympathetic supply of the stomach.

#### Indications for Operation.

Penetration through the wall of the stomach or the duodenum means that the ulcer will never heal and is therefore an indication for operation. Symptoms suggestive of penetration are persistent pain, pain not relieved by powders, and pain in the back; and a barium meal examination may suggest that penetration has occurred.

Pyloric obstruction, which is not relieved, or is only temporarily relieved, by thorough medical treatment, should be treated surgically. The test meal results in these cases may reveal a low acid curve, but this should not tempt the surgeon to carry out the easier operation of gastro-enterostomy, as the incidence of post-operative discomfort and recurrent ulceration is high, probably owing to the recovery of the secretory powers of the stomach after the relief of the obstruction.

Recurrent haematemesis requiring blood transfusions is an indication for operation, increasing in urgency with age. Haematemesis occurring in a patient aged over forty years is serious.

A single severe haematemesis in a patient with a history of ulcer dyspepsia as an indication for operation must be further qualified. Many patients have small haemorrhages from peptic ulcers which stop spontaneously or if energetic blood replacement is carried out. If after forty-eight hours of energetic blood replacement the patient's condition is not satisfactory, his ulcer is still bleeding and subtotal gastrectomy without further delay is the treatment of choice. If the patient's condition after forty-eight hours is satisfactory, vigilance must be maintained, as further severe bleeding even up to a week later may occur and is an indication for immediate subtotal gastrectomy. At operation, if the bleeding ulcer is located, it should be removed with the excised segment or, if this is impossible, as in some duodenal ulcers, the bleeding point must be attacked *in situ* with underrunning sutures or any other means of obtaining haemostasis. If no ulceration is apparent, then subtotal gastrectomy should be carried out without hesitation, as the site of bleeding is almost certainly in the excised segment or in the first part of the duodenum which can be visualized during the operation.

Haematemesis in a patient without a history of ulcer dyspepsia may be due to an acute ulcer or to a cause other than peptic ulceration. These patients are better treated medically. Haemorrhage from acute ulceration usually responds to energetic blood replacement.

Acute perforation demands immediate operation, but the best treatment consists of merely closing the perforation. Immediate subtotal gastrectomy is not ideal, because the low mortality of this operation is dependent on careful pre-operative preparation, a skilled operator, excellent anaesthesia, and a general atmosphere of calm deliberation. This cannot be obtained in an emergency under present conditions. On the other hand, it is now becoming evident that the majority of patients who have suffered acute perforation eventually require surgical treatment for the ulcer.

Most experienced gastroenterologists will agree that surgery is the only treatment for patients with the above-mentioned complications.

There remains a group of patients with uncomplicated ulcers who, despite conservative treatment, are unable to carry on with their employment and have miserable lives. The symptoms may subside with energetic medical treatment, including rest in bed. However, as soon as the patient resumes his place as a social economic unit his symptoms return. Until recently the mortality and morbidity rates of what was known as partial gastrectomy were so great that physicians hesitated to advise these patients to have surgical treatment. However, the present mortality rate of subtotal gastrectomy is so low that the operation is a reasonable risk for these patients. Furthermore, the

morbidity of the new more radical operation, now called subtotal gastrectomy, is very low. It is therefore reasonable to advise patients in this group who have chronic non-complicated ulcers to undergo surgical treatment, the treatment of choice being subtotal gastrectomy.

#### Pre-operative Preparation.

Although there is no single dramatic measure in pre-operative preparation, the cumulative advantages of many small improvements have enabled these patients to come to operation in better condition.

The patient must have satisfactory teeth before entering hospital. It is most important for these patients to be in hospital for one week before operation. The diet should be as liberal as possible, varying from a continuous drip administration of fortified milk in severe cases of pain or obstruction, to a high caloric "number 2 ulcer" diet for patients who can tolerate it. Deep breathing and coughing exercises are important and should be carried out under skilled supervision.

The haemoglobin value should be brought up to normal by blood transfusion if necessary. Many of these patients have a low haemoglobin value from slow haemorrhage or nutritional deficiencies. Even if the haemoglobin value is only slightly lowered, it is better for such patients to face the operation with a normal haemoglobin value. A low plasma protein figure is also an indication for prolonged pre-operative preparation.

#### Operation.

The best anaesthesia is considered to be "Pentothal" induction with cyclopropane, assisted by curare. It is realized that others, such as Kinsella, may quote a low mortality rate with other forms of anaesthesia, such as local anaesthesia, but all anaesthetic mortality rates for this operation should now be low, and so the best type of anaesthesia for the surgeon can be chosen. There is no doubt that general anaesthesia is more satisfactory for the patient and the surgeon, particularly if the operation takes more than two hours, which has frequently been the case in this series.

As for the technique of the operation, the greatest importance is attached to the level of the section of the stomach. The reduction in post-operative morbidity and the low ulcer recurrence rate can be attributed to the much higher section which is now carried out and which gives the operation the new title of subtotal gastrectomy.

There is no fixed anatomical point for the level of section, but at least three of the short gastric vessels should be included in the resected segment. The lesser curvature can be fully mobilized if the left gastric blood vessels are tied at the celiac axis, the left gastro-pancreatic fold is divided up to the oesophagus, and the resultant bare area of the stomach between the leaves of this fold are oversewn. A mobile spleen enables a higher section to be carried out.

There has been no important improvement in the actual technique of the operation. The method used in this series was a long loop antecolic type of anastomosis with the afferent loop to the lesser curvature and without any valve.

In a review of the literature there seems universal approval of the long loop antecolic type of anastomosis; but beyond this there is a considerable variation, such as the bringing of the afferent loop to the greater curvature or the use of some form of valve. However, there seems to be no significant difference in the mortality or morbidity figures of these latter modifications. The important factor is not to infold too much stomach into the jejunum at the greater and lesser curvature extremities of the anastomosis where the narrowest portion of the lumen is situated.

There is also considerable difference of opinion as to the advisability of draining the site of anastomosis and duodenal stump. In this series drainage was used and it was considered that this prevented serious complication from leakage in three of these cases.

There is also considerable variation in the incision used. In this series a shallow, inverted, V-shaped, horizontal

incision was used. Other surgeons prefer mid-line, left paramedian, right paramedian, left oblique or right oblique incisions and various combinations of these. The inverted V incision gives good access both to the duodenal stump and to the left gastric artery. It also avoids cutting across the aponeuroses of the three "corset" abdominal muscles; the divided *rectus abdominis* muscle heals strongly and in any case is of no importance in preventing ventral hernia. The skin heals well because the incision is along the lines of skin tension.

#### Post-operative Care.

In this series some form of intubation has been used to keep the stomach completely empty for twenty-four hours and to prevent over-distension for the next forty-eight hours, during which period oral feeding with liquids commences. In the early cases a Rehfuss tube only was used. In the last six cases two fine plastic tubes have been used, one for aspirating the stomach and the other for introducing liquid nourishment directly into the jejunum after the first twenty-four hours. The patient has a semi-solid diet from the third to the tenth day. Semi-solids are replaced by ordinary food after ten days, the only instruction to the patient being to chew well to pulverize his food. No alkaline powders are permitted.

Some surgeons are more radical in regard to early feedings, others more conservative. The above-mentioned régime has been most satisfactory. In three cases there was considerable aspiration of stomach contents after forty-eight hours owing to a hold-up in emptying into the efferent loop. In these cases aspiration was prolonged until decreased amounts indicated that the efferent loop had become patent.

#### Results.

##### Operative Mortality.

In this series of 60 cases there has been one death, or 1.6%. This was due to coronary occlusion on the seventh post-operative day in a man who was known to have aortic stenosis before operation, but whose operation was necessary owing to pyloric stenosis. However, it must be stated that there were only two patients in the series operated on in an emergency for severe haematemesis, and one of these patients was extremely ill during the post-operative period before recovery.

As this series is small, 241 cases of subtotal gastrectomy for peptic ulcer carried out at the Royal Melbourne Hospital during the years 1947, 1948, 1949 and 1950 have been reviewed. Since the main interest in mortality is the rate for those patients with chronic peptic ulcer who have not previously had a gastro-enterostomy and who are not in *extremis* as a result of haemorrhage, such cases have been omitted. In other words, the mortality rate for those cases of chronic peptic ulcer in which operation was performed by election was 4.6% (11 subjects).

#### Morbidity.

It has been the practice in this series to warn all patients that abnormal symptoms, such as a feeling of fullness during meals or regurgitation of bile and even food, may occasionally occur for about eight weeks after operation, but that these symptoms will not persist long after this period.

The morbidity has been followed closely in my own series for at least six months. The patients were particularly asked about the following symptoms, which have frequently been reported as complications of this operation: dyspepsia, "dumping" syndrome, anaemia, weakness and failure to gain weight.

There have been two cases of troublesome dyspepsia, in both taking the form of regurgitation of bile shortly after meals. This symptom disappeared in one case before twelve months after operation, but in the other case it was still present seven months after operation. Whilst it was troublesome the discomfort was controlled by the patient's resting for half an hour immediately after meals.

Both these patients also complained of not regaining normal weight or strength. This was probably due to fear, which prevented them from eating adequate quantities of food.

There were no cases of the so-called "dumping" syndrome.

There were no cases of anaemia, either microcytic or macrocytic.

There has been no suggestion of recurrent ulceration. Test meal examinations have revealed low acid secretion. This report is perhaps too early to allow the inference that ulceration in the future is unlikely, but other authors with longer observation periods are confident that recurrent ulceration is unlikely when the higher level of section is used.

#### Conclusions.

1. Surgical treatment of peptic ulceration is indicated in pyloric obstruction, penetrating ulcer, and recurrent or severe haematemesis.

2. The morbidity and mortality rates are low, and surgical treatment can now be extended to those patients with uncomplicated ulcers who can no longer be kept comfortable with conservative treatment.

3. The surgical treatment of choice is subtotal gastrectomy.

4. It is hoped that more efficient medical treatment or a simpler surgical procedure will eventually replace this radical operation.

#### Acknowledgements.

Facilities to carry out most of these operations were made available by my senior surgeon at the Royal Melbourne Hospital, Dr. Julian Smith. All these patients were investigated and prepared for operation either by Dr. Ian Wood, of the Clinical Research Unit, Walter and Eliza Hall Institute of Medical Research, or by my colleague Dr. W. E. King. Success with these cases depends on complete understanding between physician and surgeon. The low mortality rate is due in no small part to the work of my anaesthetist, Dr. A. L. Bridges Webb, and to the intravenous alimentation by Dr. E. B. Drevermann.

#### PHENYL PYRUVIC OLIGOPHRENIA, WITH NOTES ON THREE CASES.<sup>1</sup>

By S. J. CANTOR, D.P.M.,  
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PHENYL PYRUVIC OLIGOPHRENIA, or Fölling's disease, is a condition in which there is mental deficiency associated with the presence of phenylpyruvic acid in the urine; it is caused by the faulty metabolism of an amino acid, phenylalanine. The constitution of phenylalanine is  $\beta$ -phenyl- $\alpha$ -aminopropionic acid. The disease is rare. Up to 1949 some 300 cases had been recorded. The incidence is believed to be one in 25,000.

The first amino acids to be discovered were glycine and leucine (Braconnot, 1820). Tyrosine, which is closely related to phenylalanine both in structure and in metabolism, was discovered by Schulze and Barbieri in 1883. It was synthesized by Erlenmeyer and Lipp in the same year. The natural form, which is the L-form, was first separated by E. Fischer and Scholler in 1907. It is easier to obtain by synthesis than isolation from the mixture of products resulting from hydrolysis.

In 1922 Kotake showed that p-hydroxy-phenylpyruvic acid was excreted in the condition which he called tyrosinosis. With Masai and Mori he found that small quantities of phenylpyruvic acid were excreted in the urine of rabbits after large amounts of phenylalanine had been given by the

<sup>1</sup> Read at a meeting of the Melbourne Paediatric Society on April 11, 1951.

mouth. Følling observed a similar result with a female patient after moderate doses of phenylalanine had been given; the excretion of phenylpyruvic acid was roughly proportional to the amount of phenylalanine or of protein in the food. In 1934 he recorded that phenylpyruvic acid was excreted as the result of a metabolic anomaly in imbeciles, and he correctly considered that there was a connexion between this anomaly and the mental deficiency. He published notes of ten such patients, of whom nine were imbeciles, while the tenth was too young at the time for the diagnosis to be certain.

Medes at an earlier stage had confirmed the work of Kotake; while Chandler and Lewis found that in addition to forming p-hydroxy-phenylpyruvic acid, phenylalanine underwent oxidative deamination to phenylpyruvic acid, which in its turn was normally converted into acetoacetic acid, carbon dioxide and water. Følling had noted the disease in imbeciles. The present name of the disease is due to the suggestion of Jervis. The majority of cases have been recorded by the last-mentioned, while Dann and her associates report an incidence of 0.8% among feeble-minded persons in institutions. Holt and Howland estimated that patients with phenylpyruvic oligophrenia comprise 1% to 2% of all mentally defective persons. Medlicott found two cases among 190 mentally defective persons examined—an incidence of 1.1%.

In the following year (1945) Følling reported on a survey which had been made in Norway to determine the incidence of the disease. Physicians had been asked to apply the ferric chloride test to the urine of all mentally defective persons in their districts. All positive results found were subject to expert control; 34 positive results were obtained among 2400 mental defectives, an incidence of 1.4%.

#### Signs and Symptoms.

The disease is characterized by varying grades of mental deficiency, by neurological manifestations and by the presence of phenylpyruvic acid in the urine. The patient is usually well developed (except possibly the younger patient), with flaxen hair, fair complexion and blue eyes. The external genitals are well developed. In the female patients the menses are regular. Some 70% are imbeciles; the remainder are idiots. Jervis reported that 35% were imbeciles and the remainder were at idiot level. Clumsiness, repeated movements, restlessness and distractibility are common among these patients. Motor activities are usually slow. The patients are easily managed. In childhood the posture varies from normal to a flexed position. (One of my patients, aged three years, flexes himself completely flat forwards.) The body is maintained rigidly forward. The neurological signs and symptoms are related to the motor or extrapyramidal tracts. Muscular rigidity, hypertonicity, hyperactive deep tendon reflexes, knee and ankle clonus, tremors, choreiform or athetotic movements and occasionally convulsive seizures are noted. The cranial nerves are usually normal. Cerebellar signs are absent. The cerebro-spinal fluid is uniformly normal. Pneumoencephalography occasionally discloses slight dilatation of sulci and ventricles. It was noted by Dann that there is a susceptibility to eczema.

As has been noted, the degree of mental deficiency varies. Some patients are hopeless idiots, unable to do anything for themselves. Others are imbeciles, able to do some work under supervision. Others, again, can be described as retarded or backward children. In the Norwegian survey some patients were found to be able to earn a little money by their handiwork, or even to pass the final examination of the primary class. Some of these patients at a superficial examination would hardly be suspected of being feeble-minded.

#### Characteristics of Phenylalanine.

Phenylalanine, an amino acid, is a white crystalline substance, soluble in water. In the body it can be converted into phenylactic acid. It can also be converted into hydroxy-phenylpyruvic acid, which in turn can be converted into tyrosine. Tyrosine cannot be converted into phenylalanine.

#### Characteristics of Phenylpyruvic Acid.

When extracted from urine, or made synthetically, phenylpyruvic acid is found to be only slightly soluble in water. It is more soluble in organic solvents. An aqueous solution turns red Congo paper blue, an acid characteristic. The chemical formula is  $C_9H_8O_3$ . Phenylpyruvic acid made synthetically is identical with that made from urine. It is a white crystalline substance.

#### Test for Pyruvic Acid in the Urine.

Phenylpyruvic acid can be detected by the development of a transient but characteristic bottle-green colour on the addition of 5% ferric chloride solution or *Liquor Ferri Perchloridi* to acid urine. If the urine is alkaline it may be acidified with weak sulphuric acid. If it is necessary to preserve urine, toluol may be added. The reaction forms the basis of a quantitative method for blood and cerebro-spinal fluid filtrates, and has been adapted for the determination of the daily amount excreted in the urine. The amount of phenylalanine is determined by acidifying the urine and extracting with ether for twenty-four hours in a continuous extractor. This procedure removes phenylactic acid, which interferes with the determination of phenylalanine. Tyrosine is removed by treatment with potassium permanganate in the cold.

The test for phenylpyruvic acid in the urine may be modified as follows: extract the acidified urine with ether; then pour some of the ethereal solution on the surface of the 5% ferric chloride solution. A dark-green ring is observed at the junction of the liquids.

Phenylpyruvic acid is not found in the blood. It is excreted solely in the urine.

#### Biochemical Aspects.

Phenylalanine is first deaminized to form the keto acid, phenylpyruvic acid, which may then be completely oxidized. Some phenylalanine may be converted in the body to p-hydroxy-phenylpyruvic acid and on to tyrosine; some may be converted into p-hydroxy-phenyllactic acid. In phenylpyruvic oligophrenia there is little or no impairment of the metabolism of tyrosine; although such patients generally cannot make the derivative of tyrosine, melanin. Patients with phenylpyruvic oligophrenia do not metabolize tyrosine from phenylalanine or its metabolic products. They depend on their dietary intake of tyrosine for the metabolism of this amino acid, which is the basis for the formation not only of melanin pigment but also of adrenaline and thyroxine.

The essential defect in phenylpyruvic oligophrenia is the inability to dispose of phenylalanine at a normal rate, rather than a failure to break down phenylpyruvic acid. The presence of phenylpyruvic acid is to be regarded as an incidental phenomenon, resulting from the deamination of a portion of the blood phenylalanine content by kidney tissue.

Administration of phenylalanine to patients who have phenylpyruvic oligophrenia causes a rise in the excretion of phenylpyruvic acid. Administration of tyrosine does not increase the excretion of phenylpyruvic acid. These facts indicate that, as has been found clinically, the best diet for patients with the disease is one in which proteins are reduced in quantity. The conversion of phenylalanine to tyrosine, which takes place in the normal person, is deficient in phenylpyruvic oligophrenia. In this disease the primary fault is the inability to handle phenylalanine; there is a failure to oxidize the normal catabolite of phenylalanine, phenylpyruvic acid, which consequently is excreted as such in the urine.

#### The Genetics of the Disease.

Jervis, in an exhaustive study of 200 patients and their families, showed that the developmental defect is determined by a single recessive gene. In his series there was a familial incidence of 68%. Penrose noted that the syndrome of this particular type of mental deficiency, coupled with the abnormal finding of phenylpyruvic acid in the urine, was probably due to two primary developmental

defects. It is of interest to note that phenylpyruvic acid has never been noted in the urine of a normal person. It is also stated that it has never been found in the urine of a university graduate.

In view of the fact that the disease is transmitted by a single recessive gene, it is highly desirable that the parents of children suffering from the disease should be discouraged from having more children. Parenthood should also be denied to those suffering from the disease—the higher grades of mental defectives may conceivably mate—as well as their brothers, sisters, uncles and aunts (Jervis). It is recorded that a female subject of the disease was able to give birth to a child.

The disease in its hereditary origin is not sex-linked. Phenylpyruvic oligophrenia frequently occurs among several members of the same family, as has been already noted. Both sexes are equally liable to be affected. Jervis points out that 86% of the patients are blond with blue eyes.

It is probable, as Haldane has pointed out in general terms concerning hereditary diseases, that phenylpyruvic oligophrenia, which like other such diseases would tend to die out, must arise from time to time from mutations, in addition to being transmitted by parents who are apparently free from the disease but who each possess the Mendelian recessive characteristic of the disease.

Følling has noted that in two instances a normal father of an affected child married a second time. In the second marriages there were seven and five children respectively, all of whom were normal. It is to be presumed that in each first marriage both parents had the recessive gene; in the second marriages only the male parents had the responsible genes, the wives being free from the taint.

#### The Unsolved Problems of Protein Metabolism.

Prescott and his co-workers recently pointed out that the disease presents a unique opportunity for the relation of amino acid metabolism to the functions of the central nervous system to be determined. They stress that there is a high excretion, not only of pyruvic acid, but also of phenylalanine and of phenylactic acid. The source of the excretion of the amino acid and of its metabolic derivatives is probably the high concentration of phenylalanine in the blood of these subjects.

Følling suggested that the deamination of phenylalanine occurred in the kidney—a suggestion which was later confirmed. Jervis has presented strong evidence that the metabolic disturbance resides in the inability to hydroxylate the aromatic ring. At present it is not known whether the inability to hydroxylate is complete because of the total lack of a specific enzyme system, or whether only para-hydroxylation is affected. The impaired inability of many patients with this disease to form melanin points to a more extensive disturbance of the metabolism of the aromatic nucleus.

Følling and his associates, as well as others, have pointed out that the excretion of phenylpyruvic acid is increased when patients are given l-phenylalanine by the mouth and when they are put on a diet rich in protein. No other amino acid has been found to alter the excretion rate of phenylpyruvic acid. In normal persons up to 15 grammes of l-phenylalanine produce only a trace of phenylpyruvic acid in the urine, but d-phenylalanine given to normal persons causes large quantities of phenylpyruvic acid to appear in the urine. This transformation of d-phenylalanine, according to Følling, is believed to be due to the enzyme d-aminoacid desaminase found by Krebs in 1933 in the liver and kidneys of different animals, the coenzyme of which was isolated by Warburg and Christian in 1938. In 1941 Closs and Braaten injected absolutely d-free l-phenylalanine in nephrectomized rats; an increase of d-phenylalanine occurred in the blood.

Lerner has lately studied the metabolism of phenylalanine and tyrosine. He states that much evidence has been produced to show that in mammalian tissue phenylalanine is converted into tyrosine, and that tyrosine can

be oxidized to p-hydroxyphenylpyruvic acid, which can in turn form homogentisic acid. Much important work on the unsolved problems of protein metabolism, including the metabolism of phenylalanine, is now being done with radioactive labelled tyrosine, phenylalanine and other amino acids.

#### Similar Types of Hereditary Disease.

Lævulosuria is one similar type of hereditary disease. Cystinuria, which occurs once in 20,000 of the population, is another; occasionally in this condition cystine stones are formed in the urinary tract. Alkaptonuria and tyrosinosis, both of which are rare, are also hereditary in origin. In tyrosinosis there is a failure to oxidize tyrosine, owing to the lack of an oxidative enzyme. Levine and his associates have shown that normal babies born prematurely exhibit a defect in the metabolism of phenylalanine and tyrosine; however, in this case the defect can be remedied by the administration of increased amounts of vitamin C.

No improvement has followed the administration of vitamin C in relatively large doses to patients with phenylpyruvic oligophrenia. Phenylpyruvic acid is excreted as usual and the mental defect remains unchanged.

In hereditary methaemoglobinæmia the blood condition can be made normal by the continued administration of vitamin C.

#### Reports of Cases.

CASE I.—F.R., a girl, now aged fourteen years, suffers from phenylpyruvic oligophrenia. She was admitted with her condition undiagnosed to the Children's Cottages, Kew, having been certified as a congenital mental defective unable to talk, walk or feed herself. She had been mentally subnormal, at the idiot level, since birth. The mother is a Nordic blonde, with fair complexion, fair hair and blue eyes. The father has moderately dark hair and blue eyes. Neither parent has phenylpyruvic acid in the urine. The first-born child was a female Nordic blonde; she died three days after birth. The second child is the patient F.R. here described. She is a Nordic blonde, with a fair complexion, a clear white skin, flaxen hair and blue eyes. She excretes phenylpyruvic acid. The third child is the boy, D.R., aged seven years, who is normal, bright and alert. He is a typical Nordic blond. He does not excrete phenylpyruvic acid. The fourth and last child in the family is the Nordic blond boy, aged three years, presently to be described. His urine always contains phenylpyruvic acid. He has been mentally deficient since birth and is at the idiot level.

The mother's father was a Nordic blond with fair hair and blue eyes; his mentality was normal. Her cousins, who likewise had fair complexions, blue eyes and flaxen hair, were also of normal intelligence. The mother's mother had brown hair and blue eyes. The father's mother was a brunette who had blue eyes; his father had blue eyes and fair hair. Both the father's parents were mentally normal.

The Rh blood factor of the family has been determined. There is no Rh incompatibility, so far as the mother and the mentally affected children are concerned.

The parents state that when the patient F.R. and also her mentally affected brother were infants the napkins always had a peculiar odour. This odour was also noted in the breath. This odour has been tentatively identified as that due to a subcorbic state associated with spongy gums and an increased need of vitamin C.

The physical examination of F.R. revealed a pleasant-looking blonde, typically Aryan, with a vacant expression, moving her head from side to side, and uttering incomprehensible sounds, apparently of pleasure. She was rather fat, but the legs were thin (possibly from disuse). The breasts were large and flabby; breast enlargement began when she was ten years old. The lips and cheeks were well coloured. Her movements were clumsy. She was fed with some difficulty. She was unable to stand unsupported; but she could walk a little with assistance. Examination of the heart and lungs revealed no abnormality. It was stated that an X-ray examination of the head revealed a normal brain. The girl, who had had pubic and axillary hair since the age of ten years, was menstruating. The menses first began at the age of ten and a half years. The iris in each eye was blue, with a loose stroma. The fundi were normal. Examination of the central nervous system revealed active biceps and quadriceps tendon reflexes on each side. Both plantar reflexes were of the flexor type. Ankle clonus was present, more on the right side than on the left.

The skin was found to be soft, except on the outer aspect of each arm, where it was rough from some thickening of the epidermis, and changes similar to those sometimes found in mild scurvy were present. There were no stigmata of degeneration.

**CASE II.**—K.R., a boy, was nearly three years old when he was admitted to the Children's Cottages. His malady had not been diagnosed. He had been mentally defective since birth. Phenylpyruvic acid was found in his urine. He was unable to speak. He took no notice of anything said to him. His expression was vacant. He was unable to walk or to feed himself. He was in relatively poor health and physical condition. He was thin and rather pale. He had bleeding and rather spongy gums. During the seven months before his admission to hospital he had been given nothing but orange juice. A pneumo-encephalogram of the head, it was stated, had shown some lack of development of the brain. The patient was mentally at idiot level.

On examination, he was a typical Nordic blond, with fair complexion, blue eyes and flaxen hair. The knee jerks were difficult to elicit. The plantar reflexes were flexor in type. He was mentally dull, listless and unable to do anything for himself.

**CASE III.**—J.C.P., a male patient, aged twenty-three years, is a Nordic blond, with a fair, rather ruddy complexion, blue eyes with loose stroma of the iris, and fair hair. There is no albinism. There are no stigmata of degeneration. He is an imbecile of rather low grade, unable to give his age, and with little idea of figures. The health and physical condition have always been good. He is able to do simple useful work under direction. Neurological examination reveals slight tremor of the hands; also sweating is rather more pronounced than the average. No cerebellar signs are observable. The knee jerks are normal. Phenylpyruvic acid is excreted in the urine.

The father is a Nordic blond, with moderately fair hair and blue eyes. The mother is a honey blonde, with blue eyes. The patient has a sister, who is eighteen years old. She is fair complexioned and, like her parents, is mentally normal. Neither she nor the parents excrete phenylpyruvic acid. Her eyes are blue.

The patient's paternal grandfather had fair hair and very blue eyes. The paternal grandmother had fair hair and blue-grey eyes. The maternal grandfather was a typical Nordic blond; the maternal grandmother had dark hair and blue eyes. None of these or any other relative was mentally defective.

Dr. Ian Wood, of the Clinical Research Unit of the Royal Melbourne Hospital, examined this patient and carried out a number of tests, the results of which are as follows. The Wassermann test produced a negative result. The cephalin flocculation test produced a "+" reaction, and no reaction when repeated. A glucose tolerance test gave the following results: the fasting blood sugar level was 0.08%, rising to 0.14% one hour after, and falling slowly to 0.086% after three hours. No glycosuria was present. The prothrombin index was 100%. The alkaline phosphatase level was 100% (normal, 3% to 13%). The blood urea content was 39 milligrammes per centum (normal, 40 milligrammes per centum). In the urine no abnormality was detected, apart from the presence of phenylpyruvic acid. The serum protein content was 7.8 grammes per centum (normal, 6.5 to 8.0 grammes), the serum albumin content was 5.6 grammes per centum and the serum globulin content was 1.36 grammes per centum. A histamine test meal examination revealed 90 units of acid—a normal finding. A renal function test produced a normal result. A hippuric acid excretion test produced a result of 0.34 gramme (normal,  $\pm 1.33$ ).

Dr. Graeme Robertson carried out an electroencephalographic examination and reported as follows:

An irregular record with considerable variation in frequency in the occipital region, although the dominant rhythm appears to be in the alpha band. There is much artefact due to muscular movement. There are some compound slow waves which occur in various leads, but I would think these are all muscular artefacts, and there is no intrinsic abnormality in the record.

#### Discussion.

The first child in the family which includes the girl F.R. and the boy K.R. died, as has been stated, three days after birth. She was unable to take the breast. There is no evidence available to make an estimate of the degree of intelligence and Fölling has noted that it is impossible to draw any conclusions in such circumstances. She was apparently well for three days, when she developed a cold,

dying soon afterwards. The normal boy, who can be referred to as D.R., and who is seven years old, is an interesting study. He did not have the odour which the two patients had; presumably his needs of vitamin C, if the subscorbutic factor is a real one in the case of the patients, have been less. In the case of his brother, K.R., liberal quantities of vitamin C and of orange juice have been less effective in remedying the condition of the spongy gums than would reasonably be expected. The normal boy, D.R., when an infant, took the breast well. He never had the quasi-scorbutic smell that the two patients of the family had. He presumably has some instinctive or reasoned feeling that there may be some taint in the Nordic type, because (although he is only seven years old) he likes only girls with brown eyes and brown hair; he has one such young playmate of about his own age, and he states that this is the girl or the type that he will some day marry. He has no interest in girls with flaxen hair or blue eyes.

The patient K.R. has no roughness of the skin at present, but both he and his sister F.R., as well as their mother, have been subject to roughness of the skin of the face from time to time. The same boy had spongy gums and was always thin as an infant. The girl F.R. had spongy gums also in infancy and in early childhood. Development, so far as increase in weight and in improvement in body condition is concerned, first occurred with the onset of puberty.

The diet of the two patients, F.R. and K.R., has always presented a problem. Proteins, and to a lesser degree fats, have always been taken with difficulty as these caused gastric disturbances, including vomiting. Brains, suitably cooked, have, however, been found to agree with them. Little fat could be taken if proteins were also taken; also, fat has always had to be taken off soups. The girl could take less fat than the boy. Yolk of egg was preferred to egg white. The diet has consisted largely of carbohydrates, especially including vegetables. Fruit was less acceptable if milk was given at the same time. The useful or acceptable diet is consistent with the need to have antiscorbutic foods freely, along with a minimum of protein. "Vegemite", which was found welcome, served to combat loss of appetite and presumably has been a further source of vitamins. Milk could be taken freely by itself.

Both these patients usually sit up in a forward flexed position; the boy is sometimes flexed extremely forwards.

The dietary of the other patient, J.C.P., who is not related to K.R. and F.R., has never presented any difficulty.

Up to the present time 100 mental defectives of a likely type have been examined at the Children's Cottages, in addition to the three already noted. No case of the disease has been noted in these. Forty patients with indications of mental deficiency have also been examined at the Mental Hospital at Sunbury. No case of phenylpyruvic acid excretion was noted.

In a private communication Professor Alexander Kennedy, of the Department of Psychological Medicine, Newcastle-upon-Tyne, England, writes as follows:

It seems to me that cases of phenylpyruvic oligophrenia are widely distributed throughout the world, but I had not heard of previous cases in Australia. Great interest is attached to these children, as some of them seem to be subject to periodic attacks of catatonia in which the urine contains more phenylpyruvic acid; and these attacks alternate with periods of normal excretion.

#### Summary.

Phenylpyruvic oligophrenia is almost the only instance known in which mental deficiency occurs associated with a structurally normal brain. Three cases have been described. The disease is due to an hereditary defect involving the metabolism of the amino acid, phenylalanine. A review of the literature is included.

#### Acknowledgements.

The advice of Professor V. M. Trikojus and of Associate-Professor W. A. Rawlinson, of the School of Biochemistry, University of Melbourne, as well as that of Dr. R. Southby,

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#### MEDICAL AND SURGICAL ASPECTS OF THE KOREAN CAMPAIGN, SEPTEMBER TO DECEMBER, 1950.

##### PART I: CASUALTIES AND THEIR EVACUATION.

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##### PART II: THE TREATMENT OF OPEN WOUNDS OF BRITISH COMMONWEALTH BATTLE CASUALTIES.

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##### PART I: CASUALTIES AND THEIR EVACUATION.

(B.G.)

In the period under review, the Korean campaign presented as highly mobile warfare with intermittent battle in difficult terrain under rigorous climatic conditions, the 27th British Commonwealth Brigade (of which 3 Battalion, the Royal Australian Regiment, constituted one battalion) being largely dependent on the United States Army for supporting arms, certain supplies and troop-carrying vehicles. Casualties occurred as a result of enemy action, cold weather and a variety of miscellaneous causes. As there was never a static line in continual contact with the enemy, casualties due to wounds were sporadic and except for those sustained in patrol activity were largely confined to four distinct major actions. Cases of mild frostbite began to occur in November, but became more severe and more numerous in early December, when the Chinese counter-offensive was launched. The battalion was then always on the alert and very often on foot, and the men had little opportunity to adopt effective preventive measures. As the offensive slowed down, however, the brigade was withdrawn to a position north-east of Seoul, where it was able to remain until the New Year, and the incidence of frostbite fell. The freezing winter also produced disabling pain in a number of soldiers who were fit during the summer months.

#### Casualties Due to Enemy Action.

##### Small Arms.

Small arms fire (light machine guns, rifles, and in particular the automatic "burp" gun) was responsible for the majority of Australian casualties, the commonest type of wound being a clean through-and-through wound with small entrance and exit punctures. The heavy machine gun (0.50 calibre) was used by tanks and by infantry; its wounds were often lethal and always severe and mutilating. Similar guns were mounted on United Nations planes, and late stages of these wounds, comparatively untreated, were occasionally seen in captured Korean soldiers.

##### Mortars.

The enemy employed 60-millimetre, 81-millimetre, and the equivalent of 4.2-inch mortar bombs, the casings of which were usually of comparatively thin machine-turned metal. In general, therefore, the resulting wounds were less severe than those of comparable British bombs, whose casings are of cast iron and explode with larger fragmentation. Casualties were less frequent than might have been expected from the volume of mortar fire sometimes brought down on forward companies.

##### Hand Grenades.

The stick grenade, mounted on a wooden handle and containing high explosive in a light metal container, was used mainly to lower morale by its noise effect. Its small fragments caused multiple "pepperizing" wounds rarely of greater depth than half an inch, and several such casualties were treated at the regimental aid post and allowed to return to duty. When the casings were made of cast iron, milled into squares, the wounds were correspondingly more severe.

##### Artillery.

Although high explosive and airburst shells were used by the enemy, the Australian battalion experienced little artillery fire except for the sporadic activity of self-propelled guns, usually firing armour-piercing shells.

##### Mines.

Both anti-tank and anti-personnel mines were laid by the enemy, usually buried just below the surface of the ground or occasionally tied to trees or stakes. They exploded on direct pressure or by means of some push or pull mechanism set off on the trip-wire principle. Although a constant source of danger, they were responsible for relatively few casualties.

##### Air Activity.

Air activity was limited to the unwelcome attentions of "Bed-check Charlie", a small plane that derived its *nom de guerre* from its habit of chugging overhead nightly at 10.30 p.m. (for a time) and dropping several mortar bombs. Damage and casualties were minimal.

##### General Considerations.

No casualties were observed due to napalm, phosphorus bombs or flame-throwers.

In general, therefore, field experience was of through-and-through gunshot wounds, of shrapnel wounds of moderate extent, and of compound fractures; gaping wounds of the chest or abdomen with large areas of tissue loss or damage were in the minority.

##### Treatment.

The treatment of casualties at the regimental aid post consisted of no more than a minimum of first aid. Morphine, initially given by the stretcher-bearers, was given again if indicated; tea or coffee was usually provided by the padre. Control of haemorrhage was effected by pressure whenever possible, the use of a tourniquet being discouraged. Sterile field or shell dressings applied by stretcher-bearers were checked and changed only if necessary.

sary; temporary splints were sometimes replaced with Cramer wire. All casualties received 300,000 units of penicillin in oil as a routine procedure. Gas-gangrene antiserum was not given.

#### Casualties Due to Cold.

##### Frostbite.

The term "frostbite" is used in a general sense to indicate a disease of the extremities caused by cold, or exposure, or both in combination, characterized by symptoms and signs of local nervous and circulatory inefficiency. In the early stages the condition is difficult to distinguish from trench foot.

No climatic data are available for the period under review, but the winter was cold and dry, with relatively little wind. The average daily temperature was well below 32° F. and fell still lower at night. Snow first fell in mid-November, and there was a permanent snow cover in the Seoul area by mid-December.

The face and hands were rarely affected, so that other factors besides the cold appeared responsible for the predominant involvement of the feet. One of these was the American winter boot or "Snowpac", a waterproof boot made of rubber to the ankle and soft treated leather to the mid-calf, which was worn over two pairs of socks and a thick felt insole. These kept the feet warm for twelve hours or more, but eventually the accumulated sweat began to "freeze". Strict rules were laid down regarding the daily change of socks and insoles, but circumstances usually made it impossible for the men to adhere to them. In December the boots were withdrawn and replaced by American "combat boots" a rubber-soled leather boot buckling up at mid-calf level, or by Australian army pattern boots (the former having the advantage that they had no steel nails or "horseshoes" to conduct the heat away rapidly but the disadvantages of a narrow fitting and inadequate "grip" on a slippery ice surface). The Chinese wore a canvas rubber-soled boot lined with fur; one or two Australians who wore them for a short time held that they were satisfactory, but it is doubtful whether the unsupported soles would have suited many feet.

The signs and symptoms were remarkably uniform in a series of about 100 cases of varying severity. The most common presenting symptom was a painful burning sensation in the soles and balls of the feet, less frequently persistent numbness or "pins and needles". The feet were wet and soggy, with patches of white, crinkled skin. Later the feet showed a characteristic pinkish-blue colour and shiny appearance. The skin was often leathery and loose, the subcutaneous tissues being swollen and pitting on light touch. Discoloration of the great toe nailbed developed later. Areas of superficial ulceration, ecchymosis and blistering were present in most cases. Perception of heat was always impaired, sometimes with analgesia and anaesthesia. Hyperaesthesia areas were rare, although some patients complained of pain in the affected toe when it rubbed against the sock during the early stages. Pulsation in the *dorsalis pedis* artery was usually present, but its presence or absence did not appear to be related to severity at this stage.

All subjects with major skin changes were evacuated as soon as possible. Pending available transport, some were sent to a rear échelon, some were kept attached to the regimental aid post, and a few of those more mildly affected were returned to their companies. Treatment was supervised by experienced Royal Australian Army Medical Corps corporals, and patients were reviewed as necessary at the regimental aid post. Rest, elevation of the limb and foot hygiene were combined with active treatment in the form of gentle massage with "Vaseline", "Lanoline" or oily brushless shaving cream (which was easily procurable and remained semi-fluid at low temperatures). For the soggy variety, acriflavine in methylated spirits was applied. Massage with snow was never advised and all patients were warned not to "cook" their feet at a fire. Some of these subjects and most of those with minor skin changes,

improved rapidly. No case of gangrene or secondary infection occurred among those patients not evacuated.

#### Other Diseases Related to Cold.

Exposure to cold was the precipitating factor in fibrositis or myositis which became more frequent as the winter progressed. An acutely tender spot was demonstrable, usually in the lumbar or suprascapular regions. Local injection of procaine and adrenaline was effective. Joint pains, and particularly pains in the sites of old injuries or recent wounds, were often severe and sometimes incapacitating. These were genuine cold casualties; but in the absence of physical signs evacuation was recommended only after a period of observation and a trial of simple treatment. The cooperation of platoon commanders and company Royal Australian Army Medical Corps corporals was sought with a view to confirming the patient's story and assessing the degree of disability.

During the mild days and cold nights of October, nocturnal frequency of micturition associated with lumbar pain in the mornings was an almost general experience, but symptoms abated with acclimatization. In mid-winter, pyelitis was frequently encountered and responded to potassium citrate; in more severe cases sulphamerazine was given as well. It was necessary to evacuate two patients with an extensive urinary infection.

Severe upper respiratory tract infections were not prevalent, but the incidence of bronchitis, or at least of troublesome cough, was comparatively high and evacuation was sometimes required. Pneumonia was rare.

*Otitis media* was occasionally diagnosed and in at least one case there was a severe exacerbation of an old infection.

The problems of cold were not entirely confined to the diseases in which it was a predisposing or causative factor. Aqueous medicines froze or ingredients separated out, and some ointments became almost solid. Penicillin in oil required a good deal of warming before administration; when casualties were expected it was carried in the sergeant's pocket or kept in his bunk. However, it was preferred to the more quickly acting crystalline penicillin because of the difficulty of thawing the necessary distilled water. For the most part, examination of the patient was carried out with gloves on, to the greater comfort of both examiner and patient. Winter clothing was adequate.

#### Casualties Due to Miscellaneous Causes.

Accidental wounds were not uncommon and were usually due to careless handling of an Owen gun. No deliberately self-inflicted wound was found.

Transport accidents were only too common, but the casualty rate was low, probably because the roads did not permit high speeds, especially during the winter months.

Dental treatment was difficult to arrange as one had to be assured of at least a two-day halt in order to organize transport and times of attendance. Personnel who broke their dentures suffered considerable inconvenience, as a further move almost inevitably occurred before a new denture could be obtained. Men with dental abscesses received 300,000 units of penicillin in oil as a routine procedure and were treated on their merits as regards evacuation.

Venereal disease was not a serious problem, although occasional fresh cases were seen in reinforcements from Japan. Only one of the patients admitted to sexual intercourse in Korea. Treatment of gonorrhœa or urethritis consisted of the intramuscular injection of 300,000 units of penicillin in oil on two successive days, with a further injection on the fifth day if the discharge had not completely cleared. Evacuation of these patients was not considered unless the discharge still persisted; but in practice two doses were usually found sufficient. Relapses of chronic prostatitis were common, especially during the cold weather, but these were rarely severe enough to warrant evacuation. Penicillin was given in selected cases but without effect on the course of the disease. No

chancres or venereal sores were observed, although there were several cases of mild sub-preputial infection; these were apparently due to inadequate personal hygiene and responded rapidly to non-specific measures.

*Otitis externa* was not common but was important by virtue of the associated deafness. The use of drops or wicks of mercurochrome (2%) in glycerine was effective, while in one refractory case the condition responded to sulphanilamide powder. If the condition was bilateral, wicks could be used in only one ear at a time if the soldier was to remain on full duties.

Conjunctivitis due to dust was prevalent in the early weeks but was mild and responded to "Argyrol".

"Combat fatigue" or war neurosis was rare; soldiers with minor grades of functional illness usually recovered spontaneously.

Gastro-enteritis was common during October. The disease was rarely serious, blood was seldom found in the stools, and there was little pyrexia. Sulphaguanidine produced a response, but unless the treatment was continued relapse was common. An occasional man with persistent vomiting but little diarrhoea had to be evacuated. In a country so primitive in its sanitary habits and sewage disposal the importance of strict hygiene measures could not be over-emphasized.

Malaria was suspected on two occasions only and the final diagnosis is not known. "Paludrine" was administered daily as a prophylactic measure. No mosquitoes were seen after the first three weeks.

Other diseases showed no significant features. There were several cases of appendicitis. One case of alcoholic poisoning occurred, the chief symptoms being visual disturbance, gastritis and amnesia. No dietary deficiencies were noted. With each new issue of boots blisters became quite a serious problem. The most effective treatment proved to be removal of dead skin if the blisters were broken, non-interfering for at least forty-eight hours if they were not, and repeated applications of acriflavine in methylated spirits.

All personnel were inoculated against typhoid and paratyphoid fevers, typhus, cholera and tetanus, while vaccination was compulsory within one month of their leaving Japan. Typhus inoculation was repeated in December. The majority of the troops had been given influenza vaccine and had also been inoculated against Japanese B encephalitis, which has been observed in Korea. No case of any of these diseases was diagnosed.

#### The Evacuation of Casualties.

Until the arrival of the Indian Field Ambulance—which became attached to the brigade towards the end of December—the organization of casualty evacuation rested largely with battalion medical officers, and constituted a serious responsibility. The Australians were more fortunate in this respect than either of the two British battalions, in that they had attached to them a section of a field ambulance commanded by Captain E. G. H. Manchester of Sydney. However, its functional efficiency was limited by the necessity for siting where it could be protected and where satisfactory communication with the battalion could be maintained. In practice this meant that it was usually accommodated at "A" Echelon (forward stores and administration), or occasionally in the area of the reserve battalion. Naturally, these locations were not always ideal from the point of view of medical evacuation, being sometimes too far in rear or off the direct line of evacuation.

There were several contributory factors to the problem. Steep hills, almost devoid of cover, and open expanses of paddy field made the stretcher-bearers' task an unenviable one. The narrow, rough roads winding across the paddy fields and between the hills, treacherously covered with snow and ice in the winter, with dust reducing the visibility to a few feet in summer, made conditions arduous for the transport drivers (Figure I). Wounded men, travelling on open "jeeps", were troubled by the cold, especially at night, so that on several occasions American ambulance assistance was requested simply because their vehicles were com-

pletely closed in and centrally heated. Two of the "jeeps" of the Field Ambulance Section, fitted with American stretcher frames, could be partly closed in. Fortunately, it seldom rained.

The transport available consisted of three ambulance "jeeps" belonging to the Field Ambulance Section and one stretcher "jeep" (which was also the medical officer's "jeep") and one three-ton ambulance on the battalion strength. It was found more practicable, however, to exchange the ambulance for a second stretcher "jeep" from the Field Ambulance Section. If possible, additional ordinary "jeeps" were made available in emergency from those not in use. The distance from the regimental aid post to the nearest American clearing platoon was usually



FIGURE I.

Typical Korean countryside, showing narrow track leading to the battalion area at Uijongbu, north-east of Seoul.

between 10 and 20 miles, sometimes up to 30 miles, the reasons for this being the different medical organization within the United States Army and the high degree of mobility of the warfare. Whenever conditions became more static this distance decreased.

The combination of distance, difficult roads, heavy traffic and consequent slow speeds introduced a serious time factor. "Jeeps" might well be absent for some hours, thus aggravating any existing transport shortage. It was also necessary to ensure that no move of the battalion was likely before the estimated time of return of the "jeep". Consequently, there arose a tendency to "save up" non-urgent cases until a full "jeep" or ambulance load could be evacuated, with the result that on one or two occasions a sudden order to move found the regimental aid post or Field Ambulance Section with a small number of patients on its hands. In particular, this happened with some of the frostbite casualties during the withdrawal, and was partly responsible for the decision to hold a proportion of them.

Within the battalion available medical personnel were distributed amongst the companies, one experienced Royal Australian Army Medical Corps corporal being attached to each of the four rifle companies and to support company. Four stretcher-bearers were similarly allocated, and they carried two stretchers, a small reserve supply being usually held in company stores. Difficulty was experienced in replacing these skilled personnel if and when they required medical evacuation. The essential regimental aid post staff consisted of the regimental medical officer, a Royal Australian Army Medical Corps sergeant and one orderly, all of whom travelled on the "jeep" (Figure II). The stretcher-bearer sergeant and any remaining bearers (usually two or three) travelled as a rule in troop-carrying vehicles with battalion headquarters further down the column, coming forward when necessary. In convoy, the regimental aid post "jeep" usually followed the two forward companies, whether in advance or in withdrawal; but in

order to limit the number of vehicles in the leading convoy ("F" Echelon) the stores truck usually accompanied "A" Echelon in the rear. This meant that the regimental aid post "jeep", in addition to essential staff, had to carry emergency stores for two days, together with tent and heating and lighting facilities for work at night. Later a trailer was acquired.



FIGURE II.

The stretcher "jeep" carried staff and emergency supplies. The simplicity of the Australian stretcher "jeep" frame is well shown. Arms were carried for the protection of patients if necessary. The picture was taken during October, when the war was very much "on wheels".

In advance, when contact was made with the enemy, the regimental aid post took up a suitable roadside position, occasionally using the courtyard of a Korean hut; the "jeep" was unpacked and preparations were made to receive casualties (Figure III). With experience, the process occupied about ten minutes. When an overnight stand was

similar procedure was adopted, but a more elaborate regimental aid post was possible and often use could be made of a Korean house, after thorough fumigation with freon or gammexane "bombs" (Figure IV). Meanwhile, the officer commanding the Field Ambulance Section made contact with the nearest American clearing platoon and ensured that all drivers knew its whereabouts. Sometimes this information was furnished by brigade, but this was never



FIGURE IV.

When possible from the military aspect, the regimental aid post was established in a "house". This one was comparatively large and luxurious, but all were filthy and poorly ventilated.

left to chance. When casualties occurred a shuttle service was instituted between the regimental aid post and the Field Ambulance Section, who relayed them to the Americans (Figure V).

Despite the foregoing array of difficulties in the way of evacuation, only three casualties reaching the regimental aid post died before admission to hospital. One of these



FIGURE III.

A roadside regimental aid post established on Guy Fawkes's Day, which was a particularly busy one. Rarely was so deep a ditch available.

expected the tent was erected and dug down. Immediately the "jeep" was free it went forward in the charge of the stretcher-bearer sergeant to establish casualty collecting points as close as possible to each company headquarters and to bring back any casualties already incurred. The sergeant remained forward to supervise the collection and disposal of wounded as they occurred. When a defensive position was taken up, or the warfare was more static, a



FIGURE V.

Taken during the evacuation of wounded United States paratroopers relieved by the Australians near Chonju, the picture shows the open type of stretcher "jeep", the patient being kept in position by wide canvas "belts" slung around patient and stretcher. The light United States pattern "litter" (stretcher) was carried at the side of the "jeep" for emergency use, but was unfortunately not interchangeable on the "jeep" fittings with the British type. (Photograph by courtesy of Public Relations.)

cases was the only known fatality caused by a "booby trap"; the soldier suffered an extensive upper abdominal wound and was moribund on arrival at the regimental aid post a few minutes later. The remaining two cases occurred on

two occasions when there was inevitable delay in initiating evacuation. The first of these was near Pakchon, when two companies of infantry crossed the river at nightfall by means of a bombed and broken bridge (Figure VI). When casualties occurred later in the night the bridge had become impassable for stretcher cases owing to a rapid tidal rise of several feet. Stretcher-bearers secured a dilapidated boat which succeeded in making three journeys, guided by ropes from the bridge, before it sank. On its first trip, in addition to a stretcher-bearer baling, it carried a man who had sustained a compound fracture of the thigh about five hours previously, but he was dead on arrival at the Field Ambulance Section a mile further down the road. The third case occurred during a difficult night withdrawal



FIGURE VI.

Low tide at the broken bridge at Pakchon, with bearers preparing to lower a stretcher casualty by ropes. When the tide was in, part of the fallen span was covered, and a few yards of deep water separated it from the near bank. On its third trip, the boat used at this point sank with a patient and bearer on board. The patient, a strong swimmer, supported the latter, who could not swim, while the stretcher-bearer sergeant swam to their assistance. Both men were rescued. (Public Relations photograph.)

when some sections were cut off for some hours. A number of wounded men spent up to six hours virtually surrounded by Chinese and in silence so as not to give away their position. The patient in question died from multiple abdominal wounds shortly after his arrival at the regimental aid post.

Once a casualty reached the regimental aid post there was little delay in evacuating him further unless the wound was of a minor nature. Even then it is doubtful if the delay ever exceeded half an hour in any of the major actions. Occasionally patients had to be held at the Field Ambulance Section, but conditions there were at least a little more comfortable.

#### Acknowledgements.

The stretcher-bearers and Royal Australian Army Medical Corps personnel of 3 Battalion, Royal Australian Regiment, deserve praise for the skill, efficiency and keenness shown in their work at all times. The friendly and valued cooperation of British and American medical officers greatly facilitated the evacuation of casualties. In particular, without the assistance of Lieutenant Douglas Haldane, Royal Army Medical Corps, of the Argyll and Sutherland Highlanders, many Australians would have been less efficiently cared for than they actually were. Both in the field and in the preparation of this review the aid of Captain E. G. H. Manchester, Royal Australian Army Medical Corps, was greatly appreciated. Freely available to all junior medical officers, the experienced advice of Colonel C. W. Nye (Assistant Director Medical Services, British Commonwealth Occupation Force, Japan) is acknowledged.

#### PART II: THE TREATMENT OF OPEN WOUNDS OF BRITISH COMMONWEALTH BATTLE CASUALTIES. (E.S.R.H. and R.W.)

The Australian contingent in Korea sustained its first serious casualties in October, 1950, and two Australian surgeons were sent at this time to reinforce the surgical team stationed at the British Commonwealth Occupation Force General Hospital, Kure, Japan (Figure VII). This report describes the treatment of 353 consecutive open-wound casualties under their care.<sup>1</sup> Frostbite casualties and those with closed injuries have been excluded. All personnel were evacuated from the front line through American forward hospitals, reaching the base usually within five



FIGURE VII.

The British Commonwealth Occupation Force General Hospital, Kure, Japan.

days of the occurrence of the wound; all casualties, therefore, had received preliminary treatment and urgent surgical measures.

#### Type of Wound.

Through-and-through wounds (113—32%) were caused by small arms fire (0.30 calibre automatic "burp gun" *et cetera*). Both the entrance and exit wounds were often small, but the damage done to the tissues in the track of the missile might be severe.

Single or multiple penetrating wounds (171—48%) resulted from small mortar, grenade or shell fragments, from spent bullets, and from pieces of stone *et cetera*.

Large, ragged and often deep wounds (69—20%) were nearly always caused by large shell, mine or milled grenade fragments.

The wounds were occasionally quite superficial, but many were complicated by extensive muscular damage, neuro-vascular injury, fracture or joint involvement (Table I). All wounds were contaminated, but relatively few showed infection of such a degree as to preclude one-stage closure. Some wounds possessed an unpleasant smell, particularly wounds of the feet, but there was no clinical evidence of spread of infection beyond the edges of the wound (classified as "Infection +"). Other wounds were surrounded by local cellulitis ("Infection ++") as opposed to spreading cellulitis with oedema and swelling ("Infection +++") (Table II). Infection in many instances was due to incomplete excision, and in some such wounds further wound toilet was deemed necessary before closure (Table III). Wounds adequately excised and immobilized at forward units were nearly always clean and without clinical infection. Casualties with sutured wounds travelled badly, and although some good results were obtained, primary suture could not be recommended. There were no cases of tetanus and only four cases of gas gangrene (the limb had already

<sup>1</sup> Wounded personnel treated included British, Australian, Canadian, South African and French soldiers.

been amputated before the patient's arrival at the base hospital).

#### Management of the Patient in Hospital.

Immediate resuscitation was required occasionally, but in most cases it was possible to make the patient comfortable, give him a good hot meal, and have him shaved. A sound sleep prior to any operative procedure seemed beneficial to the harassed soldier.

Personal supervision in both the pre-operative and post-operative period proved the best arrangement. Field medical cards giving the details of previous medical atten-

TABLE I.  
*Complicated Wounds.*

| Complications.       | Number of Cases. |
|----------------------|------------------|
| Vascular injuries .. | 17               |
| Nerve injuries ..    | 16               |
| Bone injuries ..     | 117              |
| Joint injuries ..    | 17               |
| Visceral injuries .. | 26               |

tion of wounded personnel were extracted by the surgeon himself. All dressings were carried out in the operating theatre by the surgeon; dressings, bandaging and the application of plasters cannot be delegated if good results are to be obtained.

TABLE II.  
*Wound Infection.*

| Degree of Infection. | Number of Cases. |
|----------------------|------------------|
| No infection ..      | 231              |
| Infection + ..       | 81               |
| Infection ++ ..      | 34               |
| Infection +++ ..     | 7                |

Nutrition was improved by large, appetising meals. The best sedative for the night's sleep was full occupation by day; physiotherapy, occupational therapy, library facilities, visitors, letter-writing, and picture and live artist shows were encouraged. Natural resistance maintained by these means at the highest possible level was assisted by chemotherapy. Penicillin was used as a routine measure; 100,000 units were given every three hours for forty-eight hours, every six hours for the next forty-eight hours, and then every eight hours until healing had occurred. Streptomycin, 0.5 gramme twice a day, was given as a routine measure in all the early cases for five days; later the drug was used selectively. It did seem responsible for a high proportion of patients having healed, dry wounds in seven days, although its influence on the ten-day healing time was small.

#### Management of the Wound.

No dressings or plasters were disturbed in the wards unless they caused discomfort. The patients were taken to the operating theatre prepared for an anaesthetic, which was administered if removal of the dressings proved at all painful. Plaster casts were removed completely; windows in plaster casts at this stage were unsatisfactory, as an important wound not clearly noted on the plaster or in the history might be missed.

The surrounding skin was scrubbed with soap and water and washed with cetrimide (1%) (CTAB). The area was draped with sterile towels. Grossly damaged and contaminated tissue, blood clot, loose pieces of bone and foreign bodies were excised. The depths of the wound were explored with the finger, and all "pockets" exposed; no nidus of infection was left. Haemostasis was secured by fine plain catgut ligatures and the application of pressure and hot packs. Only dead or devitalized skin edges were excised; occasionally excessive or irregular skin was trimmed to make accurate suturing possible.

If excision appeared adequate and the wound healthy, closure followed (Table III); at times it was difficult to decide whether tissues were actually necrotic, and in such wounds a second revision was sometimes required a day or two later before the wound was suitable for closure. Cultures were prepared from a number of wounds but proved of little practical value; success or failure seemed to depend more on mechanical factors—on surgery rather than bacteriology.

When possible the wound was closed by interrupted silk sutures placed close together with accurate apposition of the skin edges. It was necessary to undermine the skin flaps in most cases to avoid tension on the suture line; if tension still existed despite this manoeuvre the wound was closed by other means. When multiple wounds were present in close relation to one another, some were sutured and others were covered with split skin grafts to avoid excessive combined tension in the intervening skin bridges.

When the wound edges would not come together, split skin grafts were applied provided that a living bed for the graft was present. The grafts were cut thinly and arranged in sheets on *tulle gras* to overlap the edges of the wound. Accurate firm apposition was maintained by a cotton-wool

TABLE III.  
*Wound Closure.*

| Type of Closure.          | Number of Cases. |
|---------------------------|------------------|
| One-stage closure ..      | 230              |
| Two or multiple stages .. | 45               |

dressing and a crêpe bandage. The donor site was dressed with *tulle gras* and sealed off from the surrounding skin. Split skin grafts proved very satisfactory. Deep cavities with extensive skin loss were lined by such grafts with excellent results. If the area was granulating and mildly infected the grafts were cut into patches or pinch grafts were used.

Bone devoid of its periosteum, tendons devoid of paratenon, open joints and bare cartilage do not form a satisfactory bed for split skin grafts. When such structures were exposed with skin loss, full-thickness skin flaps fashioned locally provided a solution. However, the viability of the flap had to be assured; puncture wounds, bruising, oedema and spreading cellulitis are contraindications to flaps. Relieving skin incisions permitted the mobilization of a bridge flap; it proved successful, but application was limited. Extension of the defect by curved incision allowed the rotation of a flap to cover the wound and was satisfactory, although in some cases mild sloughing or superficial sepsis resulted; this did not represent a failure unless the structures it was intended to cover were reexposed (Table IV).

Suture lines were dressed with dry gauze and wool, grafts and donor sites with *tulle gras* and saline wool. A firm dressing was applied to obliterate deep spaces and to prevent oozing into the tissue planes. The wound was immobilized for a minimum period of ten to fourteen days; plaster of Paris was the most satisfactory splint. The initial plaster cast was light and padded and the practice of sketching the wounds (including fractures and dates) on the outside was adopted from the outset. Windows were cut for the inspection of the wounds. When the wound was healed the plaster cast was reapplied if a longer period of immobilization was required on account of fracture.

#### Post-operative Management of the Patient.

The general measures instituted on the patient's admission to hospital were continued. The haemoglobin value was maintained at the highest possible level by repeated blood transfusions. Morale was improved by encouragement and discipline.

The first dressing of suture lines was performed on the third post-operative day; this was done in the operating theatre so that stitches could be removed, haematomas

evacuated, sloughing skin cut away, and any collections of pus evacuated. Pain, unusual swelling, or elevated temperature was an indication for an earlier inspection of the wound. The skin grafts were redressed on the fourth post-operative day, also in the operating theatre; the grafted area was trimmed and parts which had not "taken" were removed; the grafted zone was then redressed and a firm bandage was applied. Between the seventh and tenth days the dressings were removed and the wound was left open, the patient being allowed to take a daily bath whenever possible.

TABLE IV.  
*Method of Wound Closure.*

| Method of Closure. | Number of Cases. |
|--------------------|------------------|
| Suture             | 221              |
| Split skin graft   | 32               |
| Patches or pinches | 12               |
| Flaps              | 10               |

#### Results.

There were 221 cases of delayed primary suture: in two, haemorrhage occurred under the skin flaps, necessitating removal of sutures and evacuation of clots; in a third case severe sepsis intervened and the wound was reopened for drainage. These three cases (1%) were failures. In 20 cases mild wound infection delayed healing for a few days; in only 19 of the 221 wounds was healing incomplete within fourteen days.

TABLE V.  
*Results.*

| Type of Closure.   | Number. | Failures. | Complications, and Number of Cases.                    |
|--------------------|---------|-----------|--|
| Suture             | 221     | 3         | Haematoma (4); severe sepsis (1); mild sepsis (20).    |
| Split skin graft   | 32      | 1         | Sepsis (5).  |
| Patches or pinches | 12      | 1         | Sepsis (1).  |
| Flaps              | 10      | 2         | Mild sepsis (1); partial slough (3); total slough (2). |

In 27 of the 32 cases in which split skin grafts were used the "take" rate was 80% to 100% (100% in 22 cases). In four the "take" was 60% or less, and in one the graft failed completely. The last-mentioned and one of the relative failures occurred in the two cases of delayed primary suture which were unsuccessful because of haemorrhage under the skin flaps.

Patch and pinch grafts were nearly all successful, all but one of 12 such procedures ending in 80% to 100% "take". The failure (50% "take") occurred in the wound on which a split skin graft had refused to "take".

Flaps were used infrequently. Four were successful; in four further cases mild complications—namely, sloughing of the suture line (three cases) and superficial sepsis (one case)—resulted in only partial success, although the main purpose, cover of vital structures, was achieved (Table V).

#### ACKNOWLEDGEMENTS.

The lessons learnt from two world wars, and taught by such eminent Australian surgeons as the late W. A. Hailes, were applied in this series, and the authors acknowledge with gratitude the influence of these teachers. The rapid healing of a large ragged wound depends not on luck but on the cooperation of those responsible for the medical care of the soldier from stretcher-bearer to base surgeon. The United States Army medical organization functioned magnificently and the satisfactory results in this series were in no small measure due to its effectiveness and to its readiness to coordinate its services with those of the Royal Australian Army Medical Corps. If the base surgeon is to

discard once and for all the closed-plaster techniques of Winnett Orr and Trueta and replace them by the more efficient methods designed to secure early skin cover, he must be supported by an energetic staff in the operating theatres and in the wards; this support was obtained during this series. All the anaesthetics in the first half of the period under review were administered without a single complication by Captain Dorothy Murphy.

For permission to publish this article and for his advice and constructive criticism of the typescript, the authors are grateful to the Director-General of Medical Services, Major-General F. Kingsley Norris.

#### CHRONIC POLYARTHRITIS AND MONARTICULAR TRAUMA.

By MICHAEL KELLY,  
Melbourne.

IN two previous papers (Kelly, 1948, 1949) I have reported 22 cases of rheumatoid arthritis precipitated by injury to a single joint. Nine of the following eleven cases followed injury to a single joint without a break in the symptoms. In Cases X and XI the arthritis followed so soon after an injury that it must have been caused by it. None of the patients had previously had arthritis, but in Cases IV and X constitutional predisposition played a part.

#### Reports of Cases.

CASE I.—T.W.W., a man, aged thirty-six years, fell off a roof on July 18, 1949. He suffered extensive bruises and fractured three ribs and the base of the metacarpal bone of his right thumb. This fracture was slow to unite and the hand was in plaster of Paris for five months. Three months after the injury both knees swelled; then the ankles swelled, and the wrists, elbows and feet became sore. After three weeks in bed the swelling of the knees and ankles subsided, but all the joints remained painful and he had a severe backache. He gradually improved and returned to work in June, 1950; but he still has a persistent backache. The employer refused liability for the polyarthritis, but the case was heard before the Compensation Board and the worker was awarded full compensation.

CASE II.—W.C., a man, aged twenty-nine years, received a heavy blow on the outer side of the right knee in October, 1949. The site of the blow was swollen for a few days and sore for two weeks. On November 15 the knee was so painful that he could not get out of bed, and on November 17 the joint swelled. Then the left knee swelled and he was in bed for three months. The left shoulder was stiff and the back and the feet became sore. He lost 35 pounds in weight. For more than a year he has been treated at the Arthritis Clinic, Royal Melbourne Hospital. The swelling of the knees gradually subsided and he has no pain in any joints, but the weakness of his right quadriceps is delaying his return to work.

CASE III.—R.W., a youth, aged fifteen years, injured his right knee in 1947. The joint swelled and has remained painful and grossly distended since. The results of investigations of all kinds (including synovial biopsy) were negative, and orthopaedic measures to reduce the swelling were unavailing. A few months ago his ankles swelled and his right hip became painful, and now the toes of both feet are becoming sore.

CASE IV.—M.E.T., a woman, aged fifty-five years, fell and injured her right knee in November, 1947. The joint remained swollen and it was manipulated for a "slipped cartilage". The hands then became painful and swollen, and soon nearly every joint was painful (but the left knee never was affected). The arthritis gradually subsided in all the joints except the right knee, which is painful and swollen with a flexion deformity. The fingers are not painful, but there is a little enlargement of several metacarpophalangeal joints with slight ulnar deviation. This patient's mother was crippled with rheumatoid arthritis for several years before her death, and she herself suffered for a year with "sciatica" in 1930.

CASE V.—N.F., a woman, now aged twenty-eight years, was pushed by a child when she was two and a half years old; the left knee was injured, swelled and would not settle

down. Later the right knee swelled, then the hips became stiff. In spite of much treatment in hospitals, the hips, knees and vertebral column became ankylosed. The toes, the left shoulder and the elbows are affected, but the fingers, wrists, right shoulder and ankles have escaped.

**CASE VI.**—E.J.McK., a man, aged thirty-seven years, was injured on November 12, 1948, when a weight fell on his foot. No bones were broken, but the skin was damaged. Next day the foot was painful and swollen; then acute polyarthritis developed, nearly every joint becoming painful and swollen. When the swelling subsided, the hands, feet and shoulders remained painful for many months. In March, 1950, he had pain only in the shoulders, with inability to abduct the arms, and gross crepitus in the subacromial bursa. Under treatment of various kinds the pain in the shoulders gradually subsided, and he was able to do light work in January, 1951.

**CASE VII.**—J.S.S., an army cook, then aged forty-three years, injured his left ankle in 1937, fracturing it in two places. The joint remained swollen and painful, and he was discharged from the permanent army in 1938. The ankle gradually improved, but the arches of both feet became sore. Then the left ankle became more painful and swollen than the right. He joined the Australian Military Forces, but was discharged in 1944 with arthritis of both ankles. For several years he has been able to do only sedentary work. The left ankle is more painful than the right; both are swollen. X-ray examination of the ankles shows no abnormality. He suffers from bouts of severe recurrent backache, and sometimes the right heel has been very sore.

**CASE VIII.**—M.G., a woman, then aged thirty-three years, injured her right elbow in 1933. Then the fingers of the right hand began to contract. Both shoulders became painful and stiff, and the feet became sore without deformity. Her condition fluctuated through the years; now she has only gross deformities of the left index, middle and little fingers and the right ring and little fingers, with large nodules on the extensor surfaces.

**CASE IX.**—B.J., a nurse, aged thirty-one years, fell heavily and injured her back in October, 1949. She was bruised all over and had a backache for three months afterwards, with aches and pains in the limbs. She felt ill and lost 28 pounds in weight. The hands, wrists and knees became stiff two months after the injury, and the back improved. Then the shoulders became painful; the feet were sore, the ankles swelled, and the hips became painful. Now there are slight flexion deformities of the knees, swelling of the fingers and wrist and stiffness of many joints.

**CASE X.**—A.W.P., a man, aged twenty-seven years, had a severe fall down eight stone steps in September, 1947. Afterwards he was dazed and shaken, but was not seriously injured. A month later the left knee became swollen and painful, the right ankle swelled soon after, and the right knee swelled six months later. He felt very ill and lost 42 pounds in weight; his back gradually became stiff and kyphotic; his wrists are painful and swollen; his shoulders and hips are growing stiff. X-ray films show arthritic changes in the hip joints. His mother has rheumatoid arthritis in the knees, feet and one finger. He himself had never had rheumatism before, but in 1940 he had an attack of iritis of unknown causation.

**CASE XI.**—E.C.E., a man, aged forty years, fell on both wrists in October, 1948. Damage was not serious, but two weeks later the right wrist became painful and swollen. It remained so; and three months later the left knee became distended. In September, 1949, he still had gross distension of the left knee, slight swelling of the right knee, and swelling and weakness of the right wrist.

#### Discussion.

A few cases similar to these have been described since my last article. Lockie and Norcross (1948) saw a child with an injured knee who developed polyarthritis within a few months. Davison *et alii* (1950) record without comment a case of polyarthritis which followed fracture of a metatarsal bone. Short *et alii* (1949) give trauma a place among the precipitants of rheumatoid arthritis, but details of their paper are not available. Jonsson and Berglund (1949) examined the records of 1669 rheumatoid arthritis patients, and in 12 found that trauma had precipitated the first attack. They analysed these—much too critically, I believe—and for various reasons (doubt about diagnosis, doubt about trauma, doubt about continuity of symptoms) excluded 11 of them.

But it is unwise to be too sceptical. I have no doubt that a history of trauma would be elicited more frequently

if the patients were questioned about it. We tend to discount its significance because we like to think of rheumatoid arthritis as a constitutional disease. But the two ideas are not incompatible; in many cases it seems as though the constitutional disorder may be precipitated by the injury.

We know that rheumatoid arthritis may be precipitated by a large number of disorders—local or general infections, debility from various causes, surgical operations, exhaustion, exposure (Short *et alii*, 1949). Disorder of the adrenal cortex plays a part, but its fundamental pathology is unknown, and unknown factors determine its distribution in the body (Hench *et alii*, 1950). An increasing volume of evidence supports the view expressed elsewhere (Kelly, 1949, 1951) that autonomic nervous reflexes play a large part in the spread of rheumatic inflammation.

#### Summary.

Eleven further cases are reported in which a single injury precipitated a first attack of rheumatoid arthritis.

#### Acknowledgement.

My thanks are due to Dr. Reginald Howden, of the Arthritis Clinic, Royal Melbourne Hospital, for permission to report Cases II and III.

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#### Reviews.

##### PSYCHOANALYTICAL THERAPY.

The chief merits of Sandor Lorand's "Technique of Psychoanalytic Therapy" are clarity and conciseness. In the preface he states: "I am aware that this volume is coloured by my personal approach and that therein may be one of its defects". In our opinion the author habitually adopts a more didactic attitude than is customary with psychoanalysts; but though his unusual views might lead inexperienced psychoanalysts to form misconceptions concerning generally accepted psycho-analytical practice, this defect is offset to some extent by certain observations about mistakes often made by beginners such as talking to patients in technical language or unsatisfactory timing in interpretations.

Dr. Lorand rightly emphasizes the fact that the patient's personality constitutes a unity, and indicates that the ideal procedure in psychoanalysis is to help the patient to become aware of thoughts and feelings which are just below the surface of his mind. He also supports the generally held opinion that patients are not really benefited by suggesting that they follow "normal" lines of behaviour such as in the sexual sphere, but by helping them to find out why they do not. He also makes the sound comment: "The analytic situation is created by the patient's transference to the analyst and the analyst's various attitudes to the patient." This implies that the less the analyst confuses his patient

<sup>1</sup> "Technique of Psychoanalytic Therapy", by Sandor Lorand, M.D.; 1950. London: George Allen and Unwin, Limited. 8½" x 5½", pp. 260. Price: 12s. 6d.

with one or other emotionally significant person of his own childhood, the more he will be able to help the patient realize that the analyst is not such a figure from his childhood.

Evidence that Dr. Lorand has a viewpoint that differs considerably from that of the majority of analysts is supplied by the following facts: he gives his patients dissertations on biological and psychological development during childhood, he teaches patients to adopt adult ways of speaking instead of permitting the use of childish expressions, he usually explains the origin and meaning of dreams before starting to interpret them, and after mentioning the word "superego" he inserts the word "conscience" in brackets as if he considers these terms synonymous. Incidentally, it is surprising how little is said about theory of technique.

#### PREVENTIVE MEDICINE AND PUBLIC HEALTH.

DURING the last ten years or so the subject of public health and preventive medicine has developed into that of social medicine, and this development is reflected in the pattern of the books concerning it. Although Dr. Grundy's new work<sup>1</sup> is entitled "Preventive Medicine and Public Health" his approach to the subject is more in keeping with the new outlook than the title would suggest. He rightly describes it as being in no sense a text-book of hygiene and sanitary practice, but an introduction suitable especially for medical undergraduates, for students for the certificate of public health and for practitioners who wish to have a short account of the essentials of social medicine. As is the case with all such works published in England, there is much that has no application in Australia, but apart from that the volume is admirably suited for the purpose claimed for it, even for Australian readers.

It has the merit of not being too long. It contains in all 300 pages and is divided into 18 chapters and six appendices. The chapters are grouped into an introduction on the scope of preventive medicine and public health (Chapter 1) and four sections. Section 1 (64 pages) and five of the appendices hold but little interest for the Australian student or practitioner, being concerned mainly with the administrative arrangements of England and Wales and Scotland. The remainder is all useful. Section 2, on principles, consists of four chapters; Section 3, on statistics and the control of infectious diseases, of five; Section 4, on the historical aspect of the subjects and on international health organizations, could well have followed on immediately after the introduction. These three sections all present the various aspects of the subject in a manner which is not only informative but stimulating. There are notable omissions, such as industrial hygiene and psychological medicine, which have been excluded for reasons given in the preface. The indexing could with advantage be fuller, and there is an occasional inconsistency between figures given on a graph and those given in the accompanying letterpress such as occurs on pages 218 and 219, but these are but minor faults. The important thing is that the author has provided beginners in social medicine with a most readable introduction which contains much information not elsewhere collected together.

#### PHYSIOTHERAPY IN OBSTETRICS AND GYNAECOLOGY.

"PHYSIOTHERAPY IN OBSTETRICS AND GYNAECOLOGY (Including Education for Childbirth)" by Helen Heardman, while primarily written for practising physiotherapists, should be studied by all midwives and obstetricians.<sup>2</sup> Mrs. Heardman has made an important contribution to ante-natal care. Emphasis is laid on the inseparability of mental and physical education and the cooperation of husband and attendants.

<sup>1</sup> "Preventive Medicine and Public Health: An Introduction for Students and Practitioners", by Fred Grundy, M.D., M.R.C.S., D.P.H.; 1951. Luton: The Leagrave Press, Limited. 8½" x 5½", pp. 300, with 39 figures and some illustrations. Price: 18s.

<sup>2</sup> "Physiotherapy in Obstetrics and Gynaecology (Including Education for Childbirth)", by Helen Heardman, M.C.S.P., with forewords by W. C. W. Nixon, M.D., F.R.C.S., F.R.C.O.G., and Veronica Shand, S.R.N., S.C.M., M.T.D.; 1951. Edinburgh: E. and S. Livingstone, Limited. 8½" x 5½", pp. 234, with 94 illustrations. Price: 16s.

The book is set out with great clarity. Exercises are described in detail and diagrams of various movements are good. Shilla Ransom contributes a chapter on drugs used in relieving the pain of labour and stresses that "drugs can support right management but can never supplant it". Statistics suggest that in the trained group of patients labour is shorter and the incidence of delivery by forceps and post-partum haemorrhage is less than in others, but it is difficult to assess a physiological process statistically. The gynaecological section is also good, showing the value of exercises and the very limited field for massage.

There are few errors or controversial subjects. An adequate glossary of obstetrical and gynaecological terms is included and also a satisfactory bibliography.

This is an excellent book and it is greatly to be regretted that the sudden death of the author ended the work of a physiotherapist who has contributed so much to the alleviation of unnecessary pain in childbirth.

#### NATURAL CHILDBIRTH.

OF recent years there have been a number of books published for the benefit of mothers and fathers to be, and just such another is "Understanding Natural Childbirth" by Herbert Thoms, which aims to present childbirth as the natural process that it is, and to enable expectant mothers to rid themselves of the many bogies and old wives' tales associated with parturition.<sup>1</sup> Since Grantly Dick Read expounded his ideas on "natural childbirth" the new school has gained many disciples, and, provided the modern ideas are correctly taught and the mothers adequately trained, there is no saying just how far these ideas may extend. As this book is intended for expectant parents, it is simply written and beautifully illustrated by many photographs which show all phases of childbirth, from pre-natal exercises to father learning to bathe and dress his baby. The old-fashioned but newly revived custom of the baby being kept in a cot alongside its mother's bed is described under the newly devised name "rooming-in", it being stated that this name had to be invented to give a modern twist to the age-old custom which modern obstetrics had almost eliminated. Whether or not all the precepts in this book are fully accepted by the obstetrician, nevertheless he can certainly recommend it confidently to his patients and be sure they will derive much benefit from it.

#### REGIONAL ORTHOPÆDIC SURGERY.

THE advent of a text-book<sup>2</sup> on orthopaedic surgery by Paul C. Colonna is a matter of great interest to all surgeons interested in this speciality. The author is well known in this country for his original contributions, especially on disorders of the hip, and as professor of orthopaedic surgery in the University of Pennsylvania Medical School he has had the opportunity of teaching students. As stated in the title, the various orthopaedic disorders including fractures are described and discussed as they affect each region of the body. There are, however, separate chapters on the physiology and pathology of bone and on neuro-muscular disorders and bone tumours. Finally there are additional chapters on the problems of splinting and on physical medicine.

The method of treating the subject in regions enables the author to introduce each chapter with the essentials of applied anatomy and any relevant embryology, and to close with a short account of the fractures of the particular area. In spite of this useful arrangement, the subject matter is not wholly satisfactory. It is written more from the theoretical than the practical point of view, and it would be difficult for a student to distinguish between subjects which are common and important and others which are quite rare or in which surgery is not useful. For

<sup>1</sup> "Understanding Natural Childbirth: A Book for the Expectant Mother", by Herbert Thoms, M.D., in collaboration with Laurence G. Roth, M.D., with a picture story by David Linton; 1950. New York, London and Toronto: McGraw-Hill Book Company, Incorporated. 10" x 7", pp. 124, with many illustrations. Price: \$3.50.

<sup>2</sup> "Regional Orthopaedic Surgery", by Paul C. Colonna, M.D.; 1950. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 9½" x 6½", pp. 736, with 474 illustrations. Price: £5 9s. 3d.

example, eleven different operations for dealing with an ununited fracture of the neck of the femur are illustrated and described, and yet the treatment of this fracture with a three-flanged nail is dismissed in a few lines. In fact equal attention is given to the treatment of this fracture by the plaster spica fixation of Whitman and by open reduction and fixation—methods which are now of historical interest only. Again, when discussing rupture of the biceps muscle and its tendons the author states that it rarely ruptures through the belly of the muscle, but that whether the lesion is in muscle or tendon operative treatment only should be considered. From the practical point of view we think that rupture through the belly of this muscle must be so rare that it does not deserve a mention and that operative treatment in many of these cases of tendon rupture is neither useful nor justifiable.

The text and the numerous line drawings are produced at the high standard that one associates with the name of Saunders, but many of the radiographic reproductions are poor, for example, in Figure 119 it is impossible to distinguish any part of the normal skeleton. Any surgeon would be glad to own this book, but there is no group to which it can be specially recommended. It is too expensive for the undergraduate, it lacks the practical details that are essential to the resident, and it is not complete enough for use as a book of reference.

#### SERUM SICKNESS.

THE WILLIAMS AND WILKINS COMPANY is to be congratulated on having persuaded Dr. Bela Schick to translate into English "Die Serumkrankheit", which he and C. Frh. von Pirquet wrote in 1905.<sup>1</sup> "Serum Sickness", which is now available in English for the first time, is a monument to the careful and painstaking observations made by the authors at the turn of the century, and the fact that the deductions which they made at that time have stood the test of time is a further tribute to them.

The monograph deals with the reaction of the human being to the parenteral introduction of a foreign protein and leads therefrom to the basic ideas on which many of the present-day concepts of allergy and anaphylaxis depend. Although serum sickness is today a much less common occurrence than in early years of this century, it still occurs and at times poses diagnostic problems. From this point of view there is, in the case histories recorded, much of interest to all medical practitioners. Indeed the case histories are so clear and detailed that there is probably much information therein which will be of value in fields other than allergy, for example, the records of patients' weights will be of value to all interested in the problem of water balance in disease.

Dr. Schick's choice of words in this translation makes fluent English, but his idiom retains much of German flavour which many readers will find unusual.

Included in the monograph is an extensive list of publications prior to 1905 which are relevant to the subject, and this should prove valuable for those workers interested in the history and development of the concepts of allergy. In addition a short list of pertinent articles written between 1906 and 1948 is included in the preface.

This book should be of interest to practitioners in all branches of medicine.

#### HOSPITAL PLANNING.

"THE DESIGN AND EQUIPMENT OF HOSPITALS" by Ronald Ward represents one of the few books on hospital architecture produced in many years.<sup>2</sup> In Australia, where it is hoped that in the near future new hospital buildings will arise to overcome the acute shortage of hospital beds, the standards laid down in Mr. Ward's book will prove of value, for we can learn much from the experience gained in the

<sup>1</sup> "Serum Sickness", by C. Frh. von Pirquet, M.D., and Bela Schick, M.D., translated by Bela Schick, M.D.; 1951. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 9" x 6", pp. 142, with 33 charts. Price: 38s. 3d.

<sup>2</sup> "The Design and Equipment of Hospitals", by Ronald Ward, F.R.I.B.A., F.I.Ar.B., M.R.S.A.I.; 1949. London: Baillière, Tindall and Cox. 9" x 7", pp. 378, with 177 illustrations. Price: 42s.

construction and equipment of new hospitals erected recently in Britain. Ideas change rapidly, and because it takes approximately ten years from the initial planning to the occupation of a new hospital, it is stressed that we should construct a shell, the interior of which may be modified easily to conform with changing ideas.

The Birmingham Hospital Centre, the most modern in Britain, is discussed at length. Here we have a completely new centre that could well be used as a model for new projects urgently required in Australia.

This book, read in conjunction with the monthly American publication *Modern Hospital*, will enable those interested in hospital construction and equipment to keep abreast with recent advances overseas.

#### Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The Neuroses: Diagnosis and Management of Functional Disorders and Minor Psychoses", by Walter C. Alvarez, M.D.; 1951. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 9" x 6", pp. 678. Price: 95s.

The author, who is not a psychiatrist, tries to tell the "young physician" what to say and what not to say to a troubled patient.

"The Kidney: Medical and Surgical Diseases", by Arthur C. Allen, M.D.; 1951. New York: Grune and Stratton, Incorporated. 11" x 8", pp. 590, with 1115 illustrations. Price: \$15.00.

Described in the introduction as an "atlas and text of renal diseases", with emphasis on pathology, dynamic rather than static.

"The Practical Significance of Modern Cardiological Investigations", by T. E. Lowe, M.D., D.Sc., F.R.A.C.P., M.R.C.P. (London), H. B. Kay, M.D., M.R.C.P. (London), M.R.A.C.P., and H. A. Luke, M.B., B.S., D.D.R.; 1951. Melbourne: Melbourne University Press. 9" x 6", pp. 206, with 47 plates and 13 diagrams. Price: 45s.

The Stawell Memorial Prize Essay for 1949.

"Pasteur et la microbiologie", by Albert Delaunay; 1951. Paris: Presses Universitaires de France. 7" x 4", pp. 134. Fr. 100.

One of the series "Que sais-je?" described as "le point des connaissances actuelles". Written in French, the book tells the story of the development of medical microbiology.

"Recipes for Light Diets: Particularly Suitable for those with Indigestion and Gastric or Duodenal Ulcers", by E. M. Shipley, B.Sc. (H. and S.S.), and H. M. Dundas, with a foreword by F. Avery Jones, M.D., F.R.C.P.; 1951. London: J. and A. Churchill. 8" x 5", pp. 48. Price: 3s. 6d.

The recipes are shortly and clearly set out and are grouped under headings such as "soups", "fish", "eggs", "meat" and so on.

"Handbook of Psychology", by John H. Ewen, F.R.C.P.E., D.P.M.; 1950. London: Silviro Publications, Limited. 7" x 5", pp. 216. Price: 25s.

Intended for students and practitioners who may be taking up the study of psychology for the first time.

"Poisons: Their Isolation and Identification", by Frank Bamford, B.Sc.; Third Edition, revised by C. P. Stewart, D.Sc., Ph.D., with a foreword by Sir Sydney Smith, C.B.E., M.D., F.R.C.P.; 1951. London: J. and A. Churchill. 8" x 5", pp. 324, with 23 illustrations. Price: 25s.

Intended as a laboratory manual for all chemists who have to deal with cases of poisoning.

"The Design of Experiments", by Ronald A. Fisher, Sc.D., F.R.S.; Sixth Edition; 1951. Edinburgh: Oliver and Boyd. 9" x 6", pp. 260, with five figures. Price: 12s. 6d.

Deals *inter alia* with statistical control.

## The Medical Journal of Australia

SATURDAY, AUGUST 11, 1951.

*All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.*

*References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.*

*Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.*

### THE NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL.

THE encouraging announcement made recently in the daily Press by Mr. R. G. Menzies, Prime Minister, that the Commonwealth grant for purposes of medical research to the National Health and Medical Research Council was to be £144,500, has directed the attention of many people to that body. The report of the meeting of the Council held at Sydney on May 17 and 18, 1950, has recently been published. This is the latest official document produced by the Council. The members of the Federal Council of the British Medical Association in Australia receive at each of their half-yearly meetings a report from Dr. W. F. Simmons, their own representative on the Council, of the meetings which have been held during the preceding six months. They are thus able to keep themselves informed of what is going on. These reports, which are for the information of the Federal Council only, have seldom been the subject of comment in this journal. It will be useful to recall that in the original order constituting the National Health and Medical Research Council its functions were stated as follows: (a) To advise Commonwealth and State Governments on matters of public health legislation and administration, and on any matters concerning health, medical and dental care and medical research. (b) To advise the Commonwealth Government as to the expenditure of money specifically appropriated as money to be spent on the advice of the Council. (c) To advise the Commonwealth Government as to the expenditure of money upon medical research and as to projects of medical research generally. (d) To advise Commonwealth and State Governments upon the merits of reputed cures or methods of treatment which are from time to time brought forward for recognition. The funds for medical research administered by the Council are provided for by the *Medical Research Endowment Act*, 1937. It is provided in this Act that the fund shall be applied to provide assistance: (a) to departments of the Commonwealth or of a State engaged in medical research; (b) to universities for the purpose

of medical research; (c) to institutions and persons engaged in medical research; and (d) in the training of persons in medical research.

The research fund, which for some time had stood at something like £60,000 *per annum*, was increased last year to £85,000. The Federal Council was informed of this increase at its meeting at Brisbane in May, 1950, and it was pointed out on that occasion that the Federal Council's aim was that the sum provided should be £500,000 *per annum*. By the time it met in November, 1950, the National Health and Medical Research Council had used up the whole of its grant of £85,000 for the year. On account of the increase in the cost of living and the cost of equipment the Council came to the conclusion that an increase was urgently called for. It appointed a subcommittee consisting of Professor Harold Dew, Professor H. K. Ward, Sir Macfarlane Burnet and Dr. E. V. Keogh to approach the Minister with a request that the fund be increased to £142,000 a year. The Minister was interviewed and the recent announcement is the result of that interview. With the sum of £144,500 the National Health and Medical Research Council will be able to extend its activities in several avenues where they are needed. It has been stated that there is a tacit understanding that in view of the increased grant the National Health and Medical Research Council may be called upon, if a national emergency occurs, to arrange or to superintend investigations on behalf of the Commonwealth Government. In the second World War committees of the Council brought great kudos to Australia. The increased grant will, in all probability, have one useful result. The fact that increased amounts are being paid for medical research in Australia is likely to attract from other parts of the world skilled scientists who are qualified to undertake important research projects. The advent of more scientists to Australia would strengthen the hand of the Federal Council in its endeavours to secure what it regards as a proper allocation of money for medical research.

Several important matters were dealt with by the Council. One of these was vaccination against smallpox. In his opening address to the Council, the Minister for Health, Sir Earle Page, pointed out that recent events in Asia had lowered the standard of health administration in parts of that continent, and that the acceleration of air services between Australia and Asia considerably aggravated the difficulty confronting the quarantine service in its attempt to exclude quarantinable diseases from the Commonwealth. It was thus necessary that health administration and medical practice in local authority areas should be of a standard which would make the fortuitous introduction of quarantinable disease of relative unimportance. The Minister suggested that the attainment of such a standard should be an objective of high priority to the Council. He pointed out that during the month of March, 4000 odd cases of smallpox had been reported as having occurred in southern Asia in places which were engaged in trade with Australia, and that about 500 cases had occurred in South and East Africa. He asked the Council for its views whether a radical change in Australian policy of protection was needed. He asked for the Council's opinion on the wisdom of vaccination of those working at both air and sea ports who were closely connected with overseas travel, and of the desirability and

practicability of large-scale public vaccination and the future of quarantine stations. When the Council discussed this question at a later stage of its meeting, Dr. F. G. Morgan and Dr. C. E. Cook drew attention to the possibility of the introduction of smallpox to the north of Australia from endemic areas by way of New Guinea. It was also pointed out that the native population of the north coast of the Commonwealth came in contact with visiting pearl luggers and that this was a source of potential danger. The Council ultimately adopted a resolution in which it urged, as an immediate precautionary measure, the vaccination of all persons likely to be exposed if a case of smallpox developed unexpectedly. The resolution stated that this group would include medical practitioners, medical students, employees of hospitals, ambulance employees, health inspectors, persons employed in aeroplanes and on aerodromes, policemen, wharf labourers, taxi drivers, crews of Australian vessels, employees of shipping companies who came in contact with overseas traffic, pilots, Press reporters, and all persons who were likely to come in contact with overseas vessels. In this connexion it is interesting to note that at the instance of the chairman, the Council discussed the proposal that quarantine stations should be used as temporary migrant camps. Dr. G. E. Cole pointed out that quarantine stations had been founded by the States and taken over by the Federal Government and that the Commonwealth now had the moral obligation to use them for the purpose for which they were required and to maintain them for the protection of the whole Commonwealth. The Council adopted a resolution dealing with the matter as follows:

The Council is impressed by the greatly increased risk that Australia is now facing in the introduction of smallpox and other quarantinable diseases because of the vast development of air traffic and the greatly increased speed of sea traffic from countries which at the present time are suffering from widespread epidemics of these diseases.

The Council is entirely opposed to any suggestion of interfering in any way with the present quarantine station or the present system of quarantine, as it is of the opinion that this would endanger the public health of Australia.

The Council strongly believes that the Commonwealth should not relax any of its present methods of quarantine, and is of the opinion that the introduction of any other system would inevitably increase the risk of spread of outbreaks of smallpox in this country.

Another matter discussed by the Council had to do with the hazard to human health from the use of insecticides, fungicides, fumigants and weedicides. It resolved that a statement drawing attention to the dangers associated with these substances should be widely publicized. It also expressed the opinion that the States should be asked to take appropriate action to set up a committee representative of the Departments of Health and Agriculture to advise the State Governments of action to be taken to provide suitable safeguards to exposed persons.

Issued with the report of the National Health and Medical Research Council is a collateral document which is a report of the work done during the year 1950 under the *Medical Research Endowment Act, 1937*. One document should not be considered apart from the other. The work done is described under subject headings—bacteriology, biochemistry, clinical, dentistry, epidemiology, experimental medicine, haematology, neurology, neuro-

physiology, obstetrics and gynaecology, parasitology, pathology, physiology and pharmacology, virus. It is a list which must give satisfaction. At the same time it is clear that in many subjects only the surface is being scratched and that Australia could contribute much more to the sum total of knowledge if the money and the men were available. In the second document there is a list of institutions accepted as "approved research institutions". These are named under the cities: Canberra, Sydney, Melbourne, Adelaide, Brisbane, Perth. No centre in Tasmania is included. An "approved" institution must have an acceptable director, adequate accommodation and technical staff. Presumably the first requirement would be that someone at an institution would want to carry out an investigation for which financial help would be needed. Other questions of control and equipment would also arise. One would imagine that the general hospitals at Hobart and Launceston would at least raise their departments of pathology to a level worthy of "approval". But this is incidental to the whole subject of the National Health and Medical Research Council's report. Medical research is still bound to national health in the one council, and it will be remembered that the Federal Council of the British Medical Association in Australia has urged that the two should be separated. Some day no doubt this dichotomy will be effected, and medical research will not then be able to plead that it is hampered by a close association not of its own choosing.

### Current Comment.

#### STUDIES ON THE ARTIFICIAL MAINTENANCE OF KIDNEY FUNCTION.

A CONSIDERABLE literature is now collecting about the use of artificial measures to maintain life while renal function is in abeyance, as in various forms of the lower nephron syndrome. The elaborations of the artificial kidney require an experienced team, and this consideration has perhaps turned the attention of clinicians to the simpler method of peritoneal lavage. Arthur Grollman, Louis B. Turner and James A. McLean have presented the results of a study on dogs which have been subjected to nephrectomy, and have been afterwards kept alive for periods of 30 to 70 days by the carrying out of peritoneal lavage by a simplified technique.<sup>1</sup> As the outcome of their work these authors feel that this method is superior to the use of the artificial kidney or exchange transfusion. The usual period of survival of animals subjected to nephrectomy has reached only a few days in the average experience, though an extension up to five days has been found possible by keeping the test animals on a salt-free diet with a low protein content. Even the more elaborate methods of replacing the normal function of the kidneys has not done better than to increase this period up to ten days, or at the most to sixteen days. The authors found that the animals survived for extended periods if peritoneal irrigation was carried out twice daily, but in order to control the nitrogenous level in the blood at a relatively normal figure more frequent lavage was necessary. Penicillin and streptomycin were added to the irrigating fluid to prevent infection, but when the time between each lavage was reduced to every few hours it was advisable to reduce the dose of streptomycin to avoid toxic effects. The perfused fluid contained the usual electrolytes, but potassium was not considered necessary, since its amount is already increased

<sup>1</sup> Archives of Internal Medicine, March, 1951.

in the plasma of anuric subjects. A synthetic diet was fed to the animals by intubation. Irrigation was carried out on the dogs by introducing a needle through the flank; the fluid was left for variable periods and then siphoned off, after which fluid was again introduced. While this experimental work was proceeding in the laboratory human patients were treated by similar methods, but the actual technique of peritoneal irrigation was found to be most simply performed by introducing a fine polythene tube through a trocar and allowing this to remain while the drainage and lavage were being carried out. This procedure was found simple and satisfactory and permitted all the irrigation required without any complications, as this type of tube does not readily become blocked or adhere to omentum. Blood transfusions have been found a necessary part of the treatment owing to the usual anaemia which accompanies uræmia. The authors reproduce graphs showing the efficiency and speed with which the peritoneum performs the functions of a semi-permeable membrane. For example, after the introduction of a litre of saline solution with glucose into the peritoneal cavity equilibrium is complete within two hours. Use of this membrane for dialysis over a considerable period does not impair its efficiency. The results on the animals were satisfactory, but of course hypertension with its inevitable evil concomitants could not be avoided or cured after so severe and radical a procedure as double nephrectomy. The patients treated were suffering from acute anuria due to chronic nephritis or hypertensive cardiac disease, from which conditions no favourable result could well be expected. Prompt improvement in the clinical state was observed in two patients out of five, and one patient admitted to hospital in semi-coma was able to return to work, while the other had a brief remission. Another patient made a temporary recovery from the circulatory complications which threatened his life, but the remaining two showed no favourable result. It must be admitted that these were not favourable subjects for survival after acute anuria. It is the victims of anuria due to emergencies and accidents like crush traumata and incompatible transfusions who might be rescued by such measures, though it is always to be borne in mind that spontaneous recovery may occur if the kidney can sustain the anatomical and physiological insults of such states.

This work gives encouragement to those faced with such worrying emergencies. The experimental work shows that the desired end may be attained by relatively simple means, and the degree of clinical success achieved gives warrant for optimism. A conscious patient who has to undergo some of the complicated procedures which have been devised for such serious failures of renal function, has to put up with a great deal of disturbance and discomfort, and if this could be lessened without the sacrifice of hope it would be welcome.

#### METHYL ALCOHOL POISONING.

METHYL ALCOHOL is a substance used for many industrial purposes, and its poisonous nature has made it necessary to protect the public from danger. In spite of this it may be used in ignorance for external application to the body, and its incorporation in anti-freeze mixtures and use as a solvent may make it available for illicit internal use. It is worth remembering that methanol, or methyl alcohol, is absorbed by ingestion, absorption through the skin and inhalation. Experiences with "bootleg" alcohol in America during the prohibition experiment have laid stress on the dangers of blindness in survivors of severe or acute poisoning by this agent. It is common knowledge that the addition of highly unpleasant distillates to commercial methylated spirit does not entirely discourage addicts from drinking it. Possibly there is something in the slower metabolism of methyl alcohol, as compared with ethyl alcohol, which attracts these unfortunate perverts, even though the oxidation products are much more toxic

than those of ethyl alcohol. It is sad to reflect that doctors who have had some experience with patients who have taken methanol have in most instances added to their knowledge while serving in the armed forces. It seems that no warnings or attempts to instil discretion will stop men on service from trying the effects of poisonous substances which they hope will produce some of the social effects of alcohol. One of the latest contributions to the subject comes from Arthur H. Keeney and Sherman M. Mellinkoff, who have studied the features of methyl alcohol poisoning in 23 men treated in an army hospital in Korea.<sup>1</sup> They point out the importance of the slow oxidation of methanol, which produces up to 40% of the ingested dose in the form of formic acid, which is ten times stronger than acetic acid, and six times more poisonous than the original alcohol. Formaldehyde is also produced from oxidation *in vitro*, and if we allow for the difficulty in determining this substance in the body tissues, it seems probable that it is also present. Formic acid is excreted by the kidneys, and the reaction it produces with Fehling's solution may suggest a diagnosis of diabetes in comatose persons. The authors further point out that the toxic effects of methanol are due to direct irritation and destruction of tissues, and to a disturbance of the acid-base balance due to the organic acid present in excess. Therefore acidosis becomes an important factor, not only in the mechanism of the condition, but also in its treatment. The direct effects of methyl alcohol depend upon the water content of the tissues, as it is highly miscible with water and yet has a very low solvent power for fats. Further, the aqueous and vitreous of the eye contain the highest proportion of water of all body tissues, followed closely by unmedullated nervous tissue. This is no doubt an important factor in producing an unduly high concentration of methyl alcohol in the tissues of the eye after absorption, and may even be of greater significance than any assumed selective toxic action. The tissues found to be most affected are the eyes, the lungs, the gastrointestinal tract and the brain. The first six patients died within a short time. The remainder had partaken of the same batch of illegal alcohol as the sixth patient, but they were treated with alkalis, and none died or suffered permanent injury. Patients suffering from sudden blindness or profound shock are, of course, unlikely to respond to any treatment, but others may present much milder symptoms, and, indeed, may be indistinguishable from those who are suffering from over-indulgence in ordinary alcohol. It is therefore important to realize that the patient may have taken both ethyl and methyl alcohol. Varying degrees of loss of eyesight were observed in this series; after twenty-four hours reduction of central vision was common, and scotomata in other parts of the visual field were not infrequent. The disks were hyperæmic, and the edges were sometimes blurred. Keeney and Mellinkoff lay most stress on the treatment of the intense acidosis present. They recognize that there has been considerable argument about this, and the evidence drawn from animal experiment is inconclusive, but they quote Chew, in particular, who found a remarkable improvement in a series of 31 patients treated with alkalis. In the present authors' series 18 men had drunk Korean sake containing 16% of methyl alcohol. Of these, ten who were not severely ill were promptly relieved by the administration of sodium bicarbonate in six-gramme doses every two hours until the urine showed a pH of 7.5. Four others whose urine had a pH of 4.0 to 5.5, with a strong result to the acetone test, were treated by gastric lavage, 500 millilitres of a 4% solution of sodium bicarbonate being left in the stomach: these also made a good recovery. The remaining three men were seriously ill, with coma or semi-coma, and ocular signs. In view of a high degree of acetonuria they received vigorous alkaline treatment and intravenous injections of glucose. No doubt alkalis would be regarded as an important feature of treatment by all physicians because of the known chemistry of methanol poisoning, but it seems worth emphasis since the risk of death or tragic sequelæ is present. Perhaps the authors' suggestion that ketosis is also important may be borne in mind.

<sup>1</sup> *Annals of Internal Medicine*, February, 1951.

## Abstracts from Medical Literature.

### THERAPEUTICS.

#### The Treatment of Severe Haemoptysis.

H. G. TRIMBLE AND J. R. WOOD (*Diseases of the Chest*, October, 1950) state that "Pituitrin" is the best available drug for the control of severe pulmonary haemorrhage and that it must be used intravenously to be effective. Untoward effects are minimal and transient if the technique described by them is scrupulously followed; this is to dilute ten international units of "Pituitrin" with ten millilitres of normal saline and to inject this solution slowly into an arm vein over a period of ten minutes, a watch being used to measure the time taken. A short time after the introduction of the drug into the blood the patient may feel dizzy, and intense pallor may be noticed. This may be followed by slight cramp-like pains in the abdomen and a desire to empty the bowels and bladder. A bedpan should be in readiness. Nausea is of common occurrence towards the end of the injection, and swallowed blood may be vomited. The control of bleeding is prompt; it is "almost as though one had applied forceps directly to the bleeding vessel".

#### Rheumatoid Arthritis.

H. H. MAROOLIS AND P. S. CAPLAN (*Annals of Internal Medicine*, January, 1951) discuss the effect of some steroids—testosterone propionate, desoxycorticosterone acetate and ascorbic acid, and 21-acetoxy  $\Delta$ -5 pregnenolone ("Artisone Acetate")—in the treatment of rheumatoid arthritis. Testosterone in doses of from 0.05 grammes to 0.3 grammes daily, up to 7.5 grammes in all, produced systemic improvement in 11 out of 31 patients, 25 of whom were women. Relapse occurred after a few weeks, and the good effects could not be reproduced. Side effects occurred, such as masculinization, menstrual disturbances and rounding of the face. Generally the condition of the joints was not improved. Similar results were obtained with the other methods mentioned. Pituitary adrenocorticotrophic hormone (ACTH) produced a strikingly beneficial effect in three out of five of these cases when administered later, demonstrating a contrast in efficacy.

#### Streptomycin in Urinary Tuberculosis.

A. JACOBS AND W. M. BORTHWICK (*British Journal of Urology*, September, 1950) have given their impression of the results of using streptomycin as sole treatment, or as adjuvant treatment, in various groups of cases of renal tuberculosis. The number of patients treated was 46, and 44 other patients, not being given streptomycin, were used as a control. The authors conclude that streptomycin has no effect on an established caseo-cavernous renal lesion. They consider this not surprising, for, in spite of the high elimination of streptomycin by the kidney, any blood-borne agent must be excluded from such an avascular focus. By encouraging fibrosis with consequent constriction, the focus itself,

though remaining active, may become shut off. A regression of the constriction can, however, occur later. Streptomycin therapy cannot therefore be recommended to supplement surgery, and in clinical unilateral renal tuberculosis the diseased organ should be removed. The authors do not advise the automatic employment of streptomycin in all cases unsuitable for surgery. For instance, in advanced bilateral renal tuberculosis, no improvement in the renal lesions can be expected, and vesical contracture may be accelerated by fibrosis. However, streptomycin may prove to be beneficial as a prophylactic cover before and after nephrectomy. It is considered by the Medlar theory that in renal tuberculosis both kidneys at the outset are involved by minimal lesions. Therefore, after nephrectomy for a clinically unilateral lesion the antibiotic should diminish the risk of activation of the disease in the apparently healthy kidney. Streptomycin does have a beneficial effect on secondary tuberculous cystitis, but this depends on the presence and degree of disease in the upper part of the tract.

#### Malaria.

B. STRAUS AND J. GENNIS (*Annals of Internal Medicine*, December, 1950) discuss the radical cure of relapsing vivax malaria with pentaquine-quinine. They state that quinacline ("Atebrin") suppresses malaria and relieves the acute attack of malaria; it does not, however, prevent relapses. Chloroquine was non-toxic and highly effective. The British-developed "Paludrine", a synthetic biguanidine compound, was also non-toxic. Both chloroquine and "Paludrine" prevented falciparum infections, terminated the acute attack, and effected a radical cure of this type of malaria. The tendency of *Plasmodium vivax* malaria to relapse has been explained by the occurrence of a tissue phase, in which the parasite is not susceptible to drugs. The authors state that the relapse rate with *Plasmodium vivax* is from 30% to 90%. Pamaquin ("Plasmochin") and quinine reduced the relapse rate, but "Plasmochin" was regarded as toxic; the authors state that it caused anorexia, abdominal pain, diarrhoea and a host of other symptoms. Analogs of pamaquin were tested, and pentaquine (SN 13,276) or 6-methoxy-8-(5'-isopropylaminopentylamine)-quinoline was found most effective. The authors state that pentaquine is less toxic than pamaquin, but it does reduce the blood pressure and cause syncope in rare cases. Quinine acts synergistically with both these drugs. Daily doses of 60 milligrammes of pentaquine and two grammes of quinine sulphate given concurrently in divided doses at four-hourly intervals for fourteen days reduced the relapse rate from 98% to 18%. Toxic effects of pentaquine were anorexia, abdominal pain, methaemoglobinemia, drug fever and changes in the T waves. Chloroquine ("Atebrin") 1.0 gramme, followed by 0.5 gramme in six hours and 0.5 gramme on the second and third days, for a total dose of 2.5 grammes was used as a check on pentaquine. The authors state that it has a very good effect on the immediate symptoms, but has no significant effect on the relapse rate. Pentaquine 10 milligrammes every eight hours and 0.6 gramme of quinine sulphate were given concurrently to alternate patients suffering from *Plasmodium vivax* relapse.

Every other patient was given "Atebrin" as above. Of 50 patients in the pentaquine group only one suffered relapse in one hundred and fifteen days. In the "Atebrin" group 17 out of 49 suffered relapse. Pentaquine caused toxic reactions, but its administration did not have to be suspended; 75% of patients had toxic reactions—nausea, anorexia, vomiting, abdominal pain, tinnitus, giddiness and headache were common, and haemolysis and drug fever occurred. "Atebrin" toxicity was negligible. Pruritus was observed in two cases. The authors favour the use of pentaquine plus quinine for relapsing *Plasmodium vivax* malaria.

#### Desoxycorticosterone Acetate and Ascorbic Acid.

J. B. R. MCKENDRY, C. A. SCHAFENBURG AND E. PERRY McCULLAGH (*A.M.A. Archives of Internal Medicine*, February, 1951) discuss the combined administration of desoxycorticosterone acetate and ascorbic acid, and tabulate the results of this treatment in rheumatoid arthritis. The series comprised 23 patients with rheumatoid arthritis. Of 16 who received more than two treatments, nine reported subjective or objective improvement within a few days. All had been found refractory to other forms of therapy, but none had been given cortisone. The authors agree that the response to this form of combined therapy in no way compares with that which follows the use of ACTH or cortisone, and it is admitted that no evidence has been produced to support the view that combined administration of desoxycorticosterone acetate and ascorbic acid results in an effective increase in glucocorticoids. They state that combined therapy should not be used indiscriminately without regard to the dangers of salt and water retention from overdosage of the desoxycorticosterone. There are two situations in which short-term combined therapy is thought to be worthy of trial: one is in conjunction with the institution of gold treatment, when it may be hoped to control symptoms until the more delayed action of gold salts becomes effective; the other is in cases in which physical therapy is hampered by severe pain which limits its effective application. The method of treatment adopted in this series was the administration of five milligrammes of desoxycorticosterone acetate by intramuscular injection, followed within two to ten minutes by an intravenous injection of one gramme of ascorbic acid in five or ten millilitres of buffered solution. An attempt is made to analyse the factors which may have contributed to the response obtained in certain cases; the authors state that after the probable influence of weather, suggestion, and other therapies has been discounted, sufficient evidence for a pharmacological action remains in some cases to warrant further restricted trials of this method of treatment.

#### The Common Cold.

F. C. LOWELL *et alii* (*The New England Journal of Medicine*, January 25, 1951) report the results of the use of antihistaminic drugs in the treatment of the common cold. Four different varieties of the antihistaminic substances were used in over 700 volunteers in the treatment of the common cold. In others a placebo was used. The authors were unable to detect any

difference in the results of treatment of the common cold by antihistaminic drugs or by a placebo.

#### Antabuse.

A. E. BENNETT, L. G. MCKEEVER AND RICHARD E. TURK (*The Journal of Nervous and Mental Disease*, November, 1950) discuss results of treatment in 35 consecutive private hospital admissions for alcoholism. Antabuse was administered in 27 cases, contraindicated in eight. The authors state that treatment should begin in hospital in view of the hazards involved. A complete blood count, serological investigation and urine examination are routine. A diet of high protein, high carbohydrate and low fat content is supplemented by vitamin B complex. After at least two days glucose tolerance and bromsulphalein tests are carried out. If no more than 15% of bromsulphalein is retained at the end of thirty minutes, antabuse is given, 2.0 grammes on the first day and 1.5 grammes, 1.0 grammes and 0.75 grammes on succeeding days. On the fourth day the patient has his first test reaction with alcohol. The tests are repeated on the eighth day. The authors point out the dangers of this treatment. Decreased liver function is not uncommon. Some patients develop severe mental confusion and amnesia. In view of this, they state that antabuse should not be released for general use and that there is need for research to find a less toxic drug. The report concludes that if cases are carefully chosen and there is adequate cooperation of patients and relatives, treatment with antabuse shows great promise.

### NEUROLOGY AND PSYCHIATRY.

#### Facialgia (Atypical Facial Neuralgia).

A. A. RANEY, R. B. RANEY AND C. R. HUNTER (*The Journal of Nervous and Mental Disease*, March, 1951) suggest a new term "facialgia" to cover the atypical forms of facial neuralgia. They cite literature to show that many cases are due to cervical lesions. They regard headache and face pain as the "lumbago" of the cervical spine and believe that many cases are due to intervertebral disk lesions. They state that it is not surprising that after trigeminal section for *tic douloureux*, frequently certain extratrigeminal pains due to the cervical lesion are not relieved. Cases are reported in which subsequent to conventional treatment for *tic douloureux* the symptoms were relieved by attention to cervical abnormalities.

#### The Mothers of Schizophrenic Men.

CURTIS T. PROUT AND MARY ALICE WHITE (*The American Journal of Psychiatry*, October, 1950) have investigated the common belief that mothers of schizophrenic boys are over-protective, over-ambitious, domineering, over-anxious, and/or rejecting. The mothers of 25 schizophrenic boys of the average age of twenty-four years were compared with a similar number of mothers of a comparable group not having any known schizophrenia in the immediate family. The control group showed

more personal ambition and aggression towards life and a general feeling of success; this would appear to allow a more realistic relationship towards their sons. The experimental group showed a tendency to live out in their sons the emptiness they felt in their own life; it was not clearly demonstrated that these mothers were overprotective and over-solicitous. The therapeutic implication is that an independent life for the mother is indicated in order that the son may have a life of his own.

#### The Results of Operations on Acoustic Neuromata.

G. HORRAX (*Journal of Neurology, Neurosurgery and Psychiatry*, November, 1950) compares results in the operative treatment of acoustic neuromata at the Lahey Clinic. He states that about 25% of all patients who have had intracapsular removal of their tumours will be alive without serious disability or following some useful occupation five to twenty-five years after their operations. For those who have had complete removal of their tumours, over 60% will be leading useful lives. The five-year mortality rate in the intracapsular removal series was 56.2%, whereas the mortality rate for the same period among those having total extirpation was 14.1%.

H. OLIVECRONA (*ibidem*) reports that in his clinic 29% of patients who had incomplete removal of acoustic neuromata died at once, 24% were dead in three to four years, and only 25% were reasonably well at the end of thirteen years. Of those who had total removal 23.5% died at once and 55% were well and working after seven years.

J. B. PENNYBACKER AND H. CAIRNS (*ibidem*) divide their series of 130 patients with acoustic tumour into those who had no operative treatment, decompression alone, incomplete removal or complete removal. Eighty-five patients had incomplete (intracapsular) removal: nine died after the first operation, seven after the second operation and seven after an interval; 40 were working, and 11 were invalids; 11 others could not be followed up. Twenty-five patients had complete removal: four died after the operation, 12 were working, five were invalids, and four could not be followed up.

D. W. C. NORTHFIELD (*ibidem*) discusses 47 cases of acoustic neuroma, in which 57 operations were performed with 18 deaths. Total enucleation in one stage was carried out on 25 patients with six deaths. Total enucleation in multiple stages was carried out on eight patients with five deaths. Partial removal was carried out on 14 patients with three deaths; further operation was necessary for five patients, of whom three died after operation and one died subsequently. Suboccipital decompression alone was carried out on two patients, of whom both died. Emergency ventricular tap was performed on one patient, who died.

#### The Family and the Offender.

D. ABRAHAMSON AND R. PALM (*The Journal of Nervous and Mental Disease*, October, 1950) discuss the family role in diagnosis and treatment of offenders. They point out that for rehabilitation it is necessary to evaluate the psychology of the family. The

Rorschach test is regarded as being well suited to reveal the personality structure. The technique is shown in a detailed investigation of a man who was both drunkard and thief. Psychoanalysis revealed considerable sibling rivalry and a domineering mother. Both parents and siblings were submitted to the Rorschach test. It revealed that the mother was psychotic. She was cold, confused, unrealistic with wishful thinking, verging on the delusional. The father had compulsive thinking with underlying paranoid and obsessional traits. Two siblings had similar traits. The authors point out that knowledge of the precise nature of the family setting, revealing a psychological background, was of importance in the patient's new orientation. Furthermore there is revealed the story of a family which was regarded as normal, although this was not so.

#### Emotional Problems of Hypertension.

EDWARD WEISS, BERYL JAFFE AND H. KEITH FISCHER (*The American Journal of Psychiatry*, October, 1950) state that hypertension is one of the commonest disorders of civilized life and runs its course resulting eventually in vascular changes in vital organs. To the usual physical investigations of those affected have been added social investigations, Rorschach examinations and psychiatric interviews. The authors draw attention to the attitude on the part of the investigator that is satisfied with physical assessment of the condition without the spending of time with the patient in trying to find out something about the emotional life of the patient. They state that the knowledge that every psychic tendency seeks adequate bodily expression gives a practical hint for those dealing with hypertensive patients. The inner tensions that are not released through action or words may manifest themselves in the circulatory system. Total evaluation of the patient is therefore necessary. Some of the load can be taken off by helping to achieve insight into the emotional problems, by environmental manipulation, and by drug therapy and surgery, if necessary, such means being used in combination. The authors feel that all patients can be helped by psychotherapy even if there is no prospect of eradicating a well-established hypertensive state.

#### Frontal Block.

J. S. B. LINDSAY (*The Journal of Mental Science*, October, 1950) describes first animal experiments and subsequently operations on three psychotic patients in which eight infiltrations of the white matter of the frontal lobes were carried out with local anaesthetic agents. They state that on some occasions there was immediate improvement, and on others improvement only after a period of altered conduct. The duration of the benefit over several days is noteworthy. The first patient obtained immediate benefit, but the repeated infiltration led to confusion. The second patient obtained some benefit, which was sustained for weeks, apart from one of his short excited episodes. In the third case four injections were more effective in controlling behaviour over a six-week period than twelve electroconvulsive treatments in the preceding six weeks, and an equal number of electroconvulsive treatments in the subsequent six-week period.

## British Medical Association News.

### SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on May 24, 1951, at Royal Prince Alfred Hospital, Camperdown. The meeting took the form of a series of clinical demonstrations by members of the honorary medical and surgical staffs of the hospital. Part of this report appeared in the issue of July 28, 1951.

#### Mitral Stenosis Treated by Valvulotomy.

DR. J. KEMPSON MADDOX and DR. FRANK MILLS demonstrated the first two patients to have had the operation of commissurotomy performed in Royal Prince Alfred Hospital for mitral stenosis of rheumatic origin. The first patient was a married man, aged thirty-six years. He had suffered an attack of chorea at the age of five years. He had served in the armed forces in the recent war and had been discharged from service in 1943 with mitral stenosis. Subsequently he had suffered from exertional dyspnoea of increasing severity and frequent severe haemoptysis, one attack of which necessitated blood transfusion. Since operation he had felt very well and had a greatly increased exercise tolerance and could walk briskly up 40 steps. The second patient was a married woman, aged twenty-seven years. Two years prior to commissurotomy she had developed congestive cardiac failure. Since that time, she had led a life of restricted activity and had required continuous digitalis therapy. Her condition had improved considerably since operation. These patients will be described in detail in a subsequent report.

Dr. Maddox and Dr. Mills said that the operation of commissurotomy had produced good results in the hands of overseas workers, such as Campbell and Brock (1948), Bailey, Glover and McNeil (1950). The present indication for operation was established mitral stenosis in adults under the age of fifty years with some or all of the following signs of pulmonary hypertension: increasing exertional dyspnoea, recurrent "bronchitis", severe haemoptysis, pulmonary oedema and early congestive failure with venous hypertension. The contraindications were evidences of rheumatic activity or bacterial endocarditis, pronounced mitral regurgitation with enlarged left ventricle, significant aortic valve involvement, auricular fibrillation with history of embolism, and "giant" left auricle. The suggested methods of investigation were clinical history and examination, fluoroscopy with the aid of a barium bolus, the size of the left ventricle, the size and nature of movement of the left auricle, the size of the pulmonary artery, the lung fields, and the presence of calcification of the mitral valve being noted, electrocardiography with special reference to the character of the P waves, the electrical axis and evidence of ventricular hypertrophy or strain, cardiac catheterization with measurement of right heart pressures and cardiac output at rest and on exercise. The stages of the operative procedure were left thoracotomy, pericardiotomy and exposure of the left auricular appendage, digital exploration of the mitral valve, splitting of adherent valve cusps in the line of the medial and lateral commissures with the finger or valvulotome, closure and amputation of the auricular appendix. For resuscitation, intraarterial administration of blood must be available. The comment was made that while the immediate results of commissurotomy were very satisfactory, the long-term results were, as yet, not known.

#### Hypertrophic Pulmonary Osteoarthropathy.

DR. NORMAN CUNNINGHAM presented a girl, aged three and a half years, who had been referred by Dr. C. E. Winston in November, 1950, for investigation and treatment. She had been perfectly well until six months previously, when a small swelling appeared on the inside of the left ankle. At that time the possibility of a tuberculous lesion was considered. The Mantoux test result was negative, but X-ray examination was said to have revealed some decalcification of bone. Plaster was applied for a period of nine weeks without any effect on the size of the swelling. The right knee had been swollen for the past two weeks. The child had had a mild attack of whooping-cough at the age of twelve months and had had a cough on and off since then. At times she would cough up "a cupful" of phlegm, which was not particularly offensive. Her tonsils and adenoids had not been removed. On examination of the child, there was swelling of the left ankle on its medial aspect and swelling of the right knee. Auscultation of the chest revealed an occasional rhonchus at both bases. X-ray

examination of the chest, skull, sinuses and long bones provided the following findings: "No abnormality detected in the cranial bones. Mucosal thickening of both antra. The other anterior nasal sinuses appear clear. Both lung fields clear. No osseous changes detected in the long bones or in the region of the left ankle or the left foot." Blood examination revealed a total red blood cell count of 4,200,000 per cubic millimetre, a haemoglobin value of 11.6 grammes per centum, and a total leucocyte count of 11,100 per cubic millimetre, of which 53% were neutrophile cells, 31% lymphocytes, 8% monocytes, 7% eosinophile cells and 1% Türk cells. Despite the normal chest examination findings, it was felt that there was a suspicious area in the left cardio-phrenic angle, and in view of her history of coughing up large amounts of phlegm, it was decided to submit her to bronchoscopy. This was carried out by Dr. H. Harwood with the patient under general anaesthesia. Some pus was evacuated, and a bronchogram revealed very early ectatic changes at the left cardio-phrenic angle. Subsequent aspirations had been carried out by Dr. Harwood at intervals of two weeks, local anaesthesia being used. The swelling of the left ankle and right knee had disappeared, and although episodes of bronchitis still occurred, it was felt that with repeated aspirations and attention to the upper part of the respiratory tract, lobectomy might be avoided.

#### Acholuric Family Jaundice.

DR. CUNNINGHAM'S second patient, a girl, had been referred by Dr. S. Studdy in September, 1950, when she was aged seven weeks. Her birth weight had been six pounds. She was weak at birth and had to be fed by stomach tube for the first nine days. She was the third child of healthy parents. The other two children were quite well. The mother had had a "strawberry" gall-bladder containing pigment stones removed some time previously. The child's weight progress had been normal, and she now weighed eight pounds. She was fed on "Vi-Lactogen", which she took well. On examination the infant was very pale. The liver and spleen were both palpable. The haemoglobin content of the blood was seven grammes per centum. There were 2,800,000 red blood cells per cubic millimetre, and 31,000 leucocytes per cubic millimetre. Nucleated red blood cells were present in the proportion of 5% of the leucocytes. Haemolysis of the red blood cells commenced at 0.56% saline dilution and was incomplete at 0.28% saline dilution. Coagulation time was three and a half minutes, and bleeding time half a minute. Reticulocytes comprised 10% of the red blood cells. The infant was in hospital while those investigations were being carried out, and although her blood had been typed for probable blood transfusion, transfusion was not carried out as she seemed to improve clinically. The haemoglobin content of her blood also improved to 8.6 grammes per centum. A direct Coombs test result was negative. During the past eight months there had been several "crises", which had, however, not warranted blood transfusion. In January, 1951, Dr. C. R. B. Blackburn investigated the patient, her father and mother and the two other children. He found that the rest of the family were normal, whereas the patient showed increased haemolysis to a quantitative fragility test; 50% of the cells had haemolysed at a concentration of 0.48% saline (normal control 0.42%). His opinion was that the patient's condition was "a case of congenital haemolytic icterus . . . and that splenectomy should be performed . . . the surgeon should be consulted with regard to the appropriate time". At the time of the meeting, the infant weighed 18 pounds, had a haemoglobin content of the blood of 10.6 grammes per centum, and looked well. The spleen was not palpable. It was proposed to defer splenectomy for the time being, as the infant appeared so well.

#### Synovioma of the Newborn.

The last patient presented by Dr. Cunningham was a female infant, who had been born on April 7, 1951, at King George V Memorial Hospital. Her birth weight was six pounds fifteen ounces, and she was a full-time baby. The mother had had German measles when she was twenty weeks pregnant. At birth a tense red swelling was seen to be present over the medial aspect of the child's right ankle and leg. As the tumour appeared to be increasing in size, Dr. D. Officer Brown decided to excise it. That operation was performed on the third day of life. It had been considered that the tumour was either a haemangioma or an angiosarcoma. Histological examination revealed that the tumour was a sarcoma probably arising from the synovial tissue. On April 12 Dr. Officer Brown carried out a mid-leg amputation with the child under "open" ether anaesthesia. The baby was discharged from hospital on the twenty-second day of life, fully breast fed. X-ray examinations

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of the long bones, skull and chest had repeatedly failed to reveal secondary deposits. The following histopathological report had been made by Dr. V. J. McGovern:

**Macroscopic.** The specimen consists of the right foot, ankle joint and lower third of the leg of a small baby. Over the medial aspect of the ankle and foot a flap of skin has been reflected and this apparently is the site of the original operation. On bisecting the specimen, the synovial membrane of the anterior part of the tibio-astragaloid joint is thickened and has a yellow tumour-like appearance. This tumour extends medially to the site of the previous operation.

**Microscopic.** The synovial membrane as such is not recognizable. Instead it is replaced by tumour so that it would appear that the nature of this tumour is a malignant synovioma.

Dr. Cunningham remarked that the prognosis was said to be very bad. However, very few cases had been reported in the literature.

#### Raynaud's Disease.

DR. P. A. TOMLINSON presented a man, aged forty-five years, who had complained of recurring cyanotic spasms of all four extremities over a period of ten years. In the more painful spasms the digits became pallid. The limbs were often quite cold even in the summertime. Born in Australia of Irish parents, the patient had previously had difficulty in getting healed any abrasions of his fingers. He was an occasional smoker. Four months before operation, there had commenced a painful swelling of the end of his left fifth finger, which slowly became gangrenous. This had followed an intense vascular spasm in the left hand. Despite administration of "Etamon" and antibiotics, the infection continued to spread, and the pain was unremitting. The area of gangrene was increasing. Radial, ulnar, and *dorsalis pedis* arterial pulsations were all good. On November 25, 1950, left anterior cervico-dorsal sympathectomy was performed. The pain in the left upper limb had ceased when the patient awakened from the anaesthetic. The limb and the left side of the head and neck were quite obviously warmer, and did not sweat. Inflammation in the finger gradually subsided. In the hope of saving as much of the finger as possible, the gangrenous area was left to separate, the bone being divided only after the line of demarcation had appeared in the soft tissues. The patient in the meantime returned to work.

Dr. Tomlinson said that originally it had seemed likely that the patient might lose two and a half phalanges, but ultimately the loss had involved only the distal third of the end phalanx. Should symptoms become worse in the other limb the patient might need their sympathetic nerve supply interrupted. That, however, did not seem necessary at present.

#### Gangrenous Ileo-ileal Intussusception.

Dr. Tomlinson's second patient, a woman, aged sixty-five years, had been admitted to hospital with a history of abdominal colic, vomiting, and absolute constipation for five days. Her abdomen was grossly distended. X-ray examination showed dilated loops of small bowel, with fluid levels. After a short decompression of the upper part of the alimentary tract and intravenous administration of saline-glucose solution, under cuff tube anaesthesia, laparotomy was proceeded with. The intestinal obstruction was found to be due to an ileo-ileal intussusception. The bowel was gangrenous, and resection and end-to-end anastomosis were performed. The intussusception was led by a gangrenous submucosal polypus, which on histological examination proved to be a neurofibroma.

#### Carcinoma of the Left Side of the Colon.

Dr. Tomlinson then discussed a series of five cases of carcinoma of the left side of the colon with varying degrees of obstruction. They illustrated different modes in which carcinoma of the left side of the colon presented.

The first was an example of carcinoma of the descending part of the colon presenting as acute intestinal obstruction. It was a routine case, the surgery of which was completed, presenting the following sequence: (i) transverse colostomy, (ii) resection and end-to-end anastomosis, (iii) closure of colostomy.

In the next case the patient had presented with incomplete intestinal obstruction and right-sided abdominal pain with intermittent caecal distension, the condition resembling recurrent acute appendicitis. The pathological lesion was

a mass in the left side of the colon. A transverse colostomy had been performed about three weeks before the meeting. The mass had not yet been resected.

Dr. Tomlinson said that the interest in the third case was in the demonstration of another manner in which carcinoma of the left side of the colon could present. Although when he had first examined her, the patient had gross dilatation with acute obstruction of the intestine, that was not the way in which she had first come to have surgical treatment. She had had three operations in the previous few months, namely, colpotomy for pelvic abscess, hysterectomy and bilateral salpingo-oophorectomy for residual pelvic inflammation, and laparotomy for intestinal obstruction (? Hirschsprung's disease). A fourth operation was performed, and a carcinoma of the descending part of the colon was found adherent to the posterior abdominal wall. The diameter of the proximal part of the colon was that of a cricket ball. The colon distal to the growth was also very hypertrophied right down to the rectum. The carcinoma might have developed on a mild form of Hirschsprung's disease. A transverse colostomy was performed. Her subsequent operations consisted of resection of the growth (and portion of the posterior abdominal wall) and end-to-end anastomosis, followed later by closure of the colostomy. In the next six months the patient gained one and a half stone in weight. It was considered that the pathological sequence had been slow perforation and leakage, pelvic abscess, pericolonic inflammation, and acute obstruction. Enlarged lymph nodes in the resected area contained evidence of inflammation, but no neoplastic process. The colonic lesion was adenocarcinoma.

In the next case, which was one of carcinoma of the splenic flexure invading the splenic pedicle in a man, aged fifty-four years, the manner of presentation of the carcinoma differed from that in the previous cases; it presented as an abdominal mass, discovered on palpation. The mass was, however, very much larger than usual, and filled up most of the left hypochondrium. It was very irregular, and "notched", and the patient had been admitted to the medical wards with the provisional diagnosis of "splenomegaly ? leucæmia". Barium enema examination, however, showed that the mass was the splenic flexure of the colon. Laparotomy produced the following findings: (i) Incomplete obstruction. The diameter of the proximal part of the colon was three times that distal to the growth. (ii) Carcinoma of the splenic flexure—a large mass about the size of the fetal head at term, but irregular. That was adherent by local extension to the pedicle of the spleen, the posterior wall of the stomach and a loop of pelvic colon. (iii) No apparent metastases in the liver or peritoneal cavity. (iv) No apparent enlargement of the lymph nodes. Left hemicolectomy (Mikulicz obstructive resection) was carried out, with splenectomy and partial pancreatectomy. At the time of the meeting the patient was awaiting crushing of the colostomy spur prior to closure of the colostomy. The pathological report revealed that the condition was mucoid carcinoma; no carcinoma was found in lymph glands.

The final case of the group was one of carcinoma of the pelvic portion of the colon complicated by hydatid cyst of the pelvis. The patient, a man, aged sixty-eight years, gave a history of recurring abdominal pain, distension and constipation for ten days. His vomiting had become frequent a few hours prior to his admission to hospital. He had had eight previous laparotomies for liver and peritoneal hydatid cysts. The first had been performed when Dr. Hinder was on the honorary staff of the hospital. The scarred abdomen was grossly distended, with ladder patterns, and visible peristalsis. On rectal examination of the patient, a large mass, smooth in outline, was felt compressing the anterior rectal wall; it was rubbery in consistency, and about the size of two fists. X-ray examination showed that the mass was partly calcified, and the patient had grossly dilated bowel with fluid levels. Laparotomy was performed, and revealed a large hydatid cyst of the recto-vesical pouch, with intestinal obstruction due to carcinoma of the pelvic colon. The operation consisted of excision of the hydatid cyst, with drainage of the space from which it came, and Mikulicz's obstructive resection of the carcinoma of the colon. The pathological report confirmed the diagnosis of hydatid cyst with daughter cyst formation, and adenocarcinoma of the colon with no evidence of glandular involvement. The colostomy spur was in the process of being crushed at the time of the meeting.

#### Horner's Syndrome.

Dr. Tomlinson's last patient had a typical left Horner's syndrome. The condition had been present for twenty-two years, and had appeared after the drainage of an apical empyæma on the left side.

### Urological Demonstration.

DR. J. W. S. LAIDLEY discussed four cases of urological interest. First he presented the skigrams of a woman patient, aged sixty-one years, who had given a history of painless haematuria of four months' duration. An excretion urogram showed a normal upper part of the urinary tract, but the bladder shadow showed a very large filling defect which suggested an extensive neoplasm. At cystoscopy the diagnosis of vesical neoplasm was confirmed, the tumour being so large that only a small portion of it could be seen at one time. In March, 1950, the bladder was opened suprapublically and the tumour found to be an enormous papilloma growing from a relatively small pedicle situated to the right of the trigone. The tumour was roughly spherical and four inches in diameter. It was removed piecemeal by the cutting loop and coagulation. The last review cystoscopy in April, 1951, showed no recurrence.

The next case was that of a boy, aged eleven years. He had had a friendly "scrap" with his brother, and three days later developed painless haematuria. There was no trauma to the loins. An excretion urogram showed a normal right kidney, but the left one was grossly hydronephrotic with poor function. The blood clot in the pelvis could be seen outlined by the dye. Left nephrectomy was performed; the kidney was grossly hydronephrotic, and the condition was almost certainly congenital. Dr. Laidley commented that the case was a good example of the dictum that a pathological kidney bled easily.

The third case was that of a man, aged fifty years. His only complaint had been vague backache. An excretion urogram showed a grossly abnormal right kidney, the appearance of which suggested a cyst or a solid tumour. The kidney was easily palpable on abdominal examination, and a smooth enlargement of the upper pole could be felt. At operation the kidney was found to be multicystic. There was a large cyst at the upper pole with a number of smaller cysts elsewhere in the kidney. Nephrectomy was performed.

Dr. Laidley's last case was that of a man, aged forty-eight years, who had complained of pain in the left loin for one month and haematuria during the preceding month. Some years previously an inguinal gland biopsy had been performed and the condition found reported as being "lymphosarcoma". The left pyelogram was grossly abnormal and most unusual in appearance. The kidney was dislocated laterally, and the whole collecting system was spread in such a manner as to suggest a widely infiltrating tumour of the renal parenchyma. In addition to those findings a left varicocele was present and even palpable when the patient was in the supine position. A course of deep X-ray therapy was given to the left loin and the left pyelogram repeated a month later. The contrast between the two pyelograms was most obvious; the second was almost within normal limits, and the kidney had retreated medially almost to its normal position.

DR. A. WALKER-SMITH showed a man, aged fifty-nine years, who gave a history of intermittent painless haematuria during the past year. There had also been episodes of transient clot retention in the previous two months, and the patient had lost two and a half stone in weight since the onset of symptoms. At cystoscopy a buff-coloured, jelly-like material was seen extruding from the right ureteric orifice. A catheter would not pass beyond 20 centimetres up the right ureter, and on the attempt being made to prepare a pyelogram, all the medium refluxed into the bladder. An excretion urogram was quite inconclusive, and a further attempt at retrograde pyelography gave no further information, as again the medium refluxed into the bladder, the catheter being blocked once more at the same point in the ureter. The right kidney was not palpable until the patient was under anaesthesia. In May, 1951, a right nephrectomy was performed, a provisional diagnosis of carcinoma of the renal pelvis having been made. The ureter was thickened, and was divided at the level of the brim of the pelvis, where it was still obviously enlarged. The ends were carbolized, and it was decided not to remove the entire ureter at one sitting, as the nephrectomy had been difficult. The buff-coloured, jelly-like material, seen at cystoscopy, was noted in the lumen of the ureter; it was found to be without structure on section. Dr. V. J. McGovern made the following report on the specimen:

Macroscopic. The kidney is almost entirely replaced by a tumour which is growing into the pelvis and down the ureter.

Microscopic. The tumour is much more anaplastic than the usual Grawitz tumour, and the cells are large and irregular. Much degeneration and haemorrhage are present.

Dr. Walker-Smith said that the patient was having a post-operative course of deep X-ray therapy. In view of the pathological report, he did not think that ureterectomy was indicated. He had no ideas about the jelly-like material in the ureter, which blocked the catheter; it was quite distinct from the neoplastic material which occupied the proximal inch of the ureter.

Dr. Walker-Smith's second patient, a man, aged seventy-one years, had complained of a swelling in the left side of the scrotum of four months' duration. There had been an ache in the left loin for two years, but no history of haematuria. On examination of the patient, a left varicocele was noted, and the left kidney was palpable. The left pyelogram suggested renal neoplasm. The right pyelogram was normal. The chest appeared normal on X-ray examination. A left nephrectomy was performed in January, 1951. An aortic gland was also removed. Dr. V. J. McGovern made the following report:

Macroscopic. There is no indication as to the original site of this tumour. The tumour has penetrated the kidney capsule in the upper pole, and is invading some muscle tissue which is attached.

Microscopic. The appearances are highly suggestive of suprarenal cortical carcinoma; the appearance is not that of a Grawitz or pelvic tumour. A lymph gland from adjacent to the aorta contains tumour tissue.

The patient had a post-operative course of deep X-ray therapy. When examined recently he had looked well, but the prognosis was gloomy.

DR. A. L. CARRODUS showed a patient, aged sixty-five years, who had complained of a "lump in the right side" which he had first noticed six weeks previously. There had been no pain and no haematuria. On examination of the patient an enlarged right kidney was easily palpable in the right iliac fossa and right loin; the lower pole was firm. Excretion and retrograde pyelography confirmed the clinical diagnosis of carcinoma. No metastases were detected. Right nephrectomy was performed in March, 1951 (after resection of the twelfth rib), and the patient was given a post-operative course of deep X-ray therapy. Dr. V. J. McGovern made the following report on the specimen:

Macroscopic: A very large kidney weighing 860 G. growing in it there is a very large Grawitz tumour occupying most of the lateral portion of the kidney and its lower pole. It appears to have infiltrated slightly in the perinephric tissue and most of it is necrotic and some is haemorrhaging. No invasion of the renal vein can be seen.

Microscopic: The specimen consists of a very anaplastic tumour tissue composed in one portion of large epithelioid cells which here and there tend to form acini. Invasion of vessels can be seen readily. The appearance is very different from that of the usual type of Grawitz tumour. Necrosis is present.

Dr. Carrodus then referred to the case of a patient, aged seventy-one years, who had presented with a history of painless haematuria of four months' duration and had undergone left nephrectomy in May, 1950, for "squamous carcinoma of the renal pelvis". In April, 1951, she had been readmitted to hospital confused and complaining of abdominal pain. There was no radiological evidence of metastases. She died in May, 1951. At autopsy secondary deposits were found in the liver, left perinephric tissues and paraaortic lymph glands. A specimen of kidney tumour was presented as well as slides for microscopic examination.

### Chorionepithelioma following Hydatidiform Mole.

DR. CLEMENT CHAPMAN showed a patient who had had chorionepithelioma following a hydatidiform mole. He commented that her case illustrated the necessity of very close follow-up after hydatidiform mole. The patient was a primipara, aged twenty years, who had attended the outpatient department on March 12, 1951, with a history of bleeding *per vaginam* since January, 1950. Her last menstrual period had occurred on November 27, 1950. Her uterus was the size of a twenty weeks' gestation. A provisional diagnosis of hydatidiform mole was made. On March 19, 1951, X-ray examination showed the absence of fetal parts. On March 27 she was admitted to hospital with bleeding *per vaginam*, vomiting, swelling of the feet, severe albuminuria, and a raised blood pressure. Two days later she showed signs of severe toxæmia and preeclamptic symptoms. Her systolic blood pressure continued to rise. Hysterotomy under local anaesthesia was performed, and a hydatidiform mole evacuated. The patient was discharged from hospital after two weeks. On April 24 slight

infection was present in the wound, and two ounces of pus were evacuated. On May 3 bleeding began again *per vaginam*, and after one week's observation the patient was readmitted and curettage was performed. The result of a Friedman test was strongly positive. X-ray examination of the chest revealed no secondary deposits. Microscopic examination of curettage material showed undoubted evidence of chorionepithelioma. On May 18 total hysterectomy with conservation of one ovary was performed, and examination of a section of the uterus showed high up in the fundus a chorionepithelioma extending at least one inch into muscle of uterus. The microscopic appearance of this chorionepithelioma was similar to that of the previous scrapings. The removed ovary showed considerable luteinization of the *corpus luteum*. On May 24 a further Friedman test showed the reaction to be still positive. On June 12 X-ray examination of the chest revealed no secondary deposits.

#### Acute Hydranmios.

DR. W. D. CUNNINGHAM showed a woman, aged twenty-six years, with acute hydranmios. She was in her third pregnancy, at the thirtieth week of gestation. Her previous two pregnancies had been normal. Examination of the patient showed a greatly distended abdomen of forty-five inch girth at the umbilicus. A well-marked fluid thrill was present. Fetal parts were difficult to palpate, and the fetal heart sounds could not be heard. Gross oedema of the lower part of the abdomen was present accompanied by moderate oedema of the thighs and legs. X-ray examination showed no abnormality of the fetal skeleton. Conservative treatment was decided upon.

#### NOTICE.

THE eighteenth Sir Richard Stawell Oration will be delivered by Dr. Douglas J. Thomas on October 3, 1951, at the Royal Australasian College of Surgeons, Spring Street, Melbourne. The subject of the oration will be "Time, Science and the Individual".

### Medical Societies.

#### MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held at the Children's Hospital, Carlton, Melbourne, on April 11, 1951.

#### Phenylpyruvic Oligophrenia.

DR. S. J. CANTOR read a paper entitled "Phenylpyruvic Oligophrenia with Notes on Three Cases" (see page 187).

DR. J. W. PERRY said that he was very interested in the problem, and wished to point out that excretion of phenylpyruvic acid in the urine was frequently associated with, firstly, albinism and, secondly, the passage of homogenetic acid in the urine. He went on to say that unless it was specifically looked for, the condition would be missed, and that was obviously what had happened in Australia, as Dr. Cantor's cases were the first three to be reported. When any patient failed to thrive and an adequate cause could not be found, it was well to think of some error of metabolism. Chromatography in such cases was an avenue of investigation that might profitably be pursued.

DR. HOWARD WILLIAMS asked if there was any correlation between the quantity of phenylpyruvic acid excreted in the urine and the degree of mental deficiency.

DR. CANTOR replied that there was a rough quantitative correspondence, in that the greater the amount of phenylpyruvic acid excreted, the greater the degree of mental deficiency.

<sup>1</sup> The day after the clinical meeting the patient asked for a bedpan, and while sitting on it, felt a bearing-down sensation. The membranes ruptured, and a male infant was delivered into the bedpan precipitately with an onrush of *liquor amni*, in greater quantities. The infant lived for one hour after birth. The third stage of labour was normal. The mother progressed well subsequently. Post-mortem examination of the baby revealed bilateral hare-lip, a cleft palate and a left diaphragmatic hernia, containing stomach, left lobe of the liver and some coils of small intestine. A double ureter was found.

DR. V. L. COLLINS asked what happened to the patients after they were given diets of high protein content.

DR. CANTOR replied that they tended to develop disorders of digestion, with vomiting and a skin rash, and the mental symptoms were aggravated.

#### Congenital Ileal Stenosis.

DR. RUSSELL HOWARD presented a male child, aged ten months, who, at the age of six months, had had the following history. After birth the baby had not thrived adequately and at the age of six months weighed only 13 pounds; the birth weight was seven pounds nine ounces. Almost since birth he had been subject to attacks of vomiting, infrequent at first, but latterly occurring almost weekly and lasting for about twenty-four hours. The bowels were open regularly, and the stools were frequently greyish and foul-smelling. The child had had two sojourns in a well-known baby home, the first one shortly after birth, and the second from the age of four to five months. It was believed that the failure to thrive was due to a disorder of digestion, and dietetic measures had on those occasions produced increase in weight. A middle ear infection had occurred and been cured.

At the age of six months the child was examined during his most severe attack of vomiting, then of some twenty-four hours' duration. The vomitus was said to have been brownish, but that was not actually seen by a doctor. No disturbance of bowel action was present, but the stools were grey and foul-smelling and not unlike those of celiac disease. The abdomen was somewhat distended but not tense; no ladder pattern or visible peristalsis was seen.

The child was admitted to the Children's Hospital at the age of ten months with the diagnosis of incomplete small-bowel obstruction. The vomiting became less and bowel actions persisted, but thirty-six hours later the abdomen was still somewhat tumid and a straight X-ray film showed distended coils of small intestine. Operation was performed on the following day and revealed a stenosis of the ileum approximately two feet from the ileo-caecal valve. The bowel above the stenosis was grossly dilated and hypertrophied. A lateral anastomosis was performed without resection of gut, and an uninterrupted convalescence ensued. The child was thriving vigorously at the time of the meeting.

DR. HOWARD commented on the difficulties of diagnosis of incomplete chronic small-bowel obstruction, occurring notably in ileal stenosis and volvulus of the small intestine. The similarity of symptoms in those conditions to dyspepsias of medical aetiology made differentiation very difficult. The order of investigation should be straight X-ray examination of the abdomen, administration of a barium enema to detect a possible undescended caecum, and finally, if the condition was still undiagnosed, a barium meal, note being made of any anomalies of the duodenum and of any hold-up of the barium. It should be realized that the last-mentioned investigation could precipitate complete intestinal obstruction and preparations should be made to deal with that eventuality immediately. If that was done, danger to life was very small.

DR. V. L. COLLINS stated that he had obtained the following details from the day and night reports of the baby hospital. The baby was admitted at the age of two weeks as he was not thriving and had occasional vomiting attacks and the breast supply was not adequate. The baby improved rapidly, had normal stools and was discharged from hospital in ten days, having gained six ounces in weight. At the age of three and a half months the baby was readmitted to hospital, as he was not thriving, had occasional vomiting attacks, and had been passing rather greasy stools. The baby had *otitis media*, and during a period of seven weeks that Dr. Collins observed the baby, only one large vomiting was noted. The bowel actions during that period were rather irregular, the baby being constipated one day, and then passing two or four rather loose bulky greasy stools the next. When the baby was five months of age his weight was thirteen pounds five ounces and he appeared fairly well, although the abdomen was a little distended, and had rather a doughy feel on palpation. The last-mentioned sign was the only real abnormality, and at that stage Dr. Collins did not feel that further investigation was indicated.

DR. K. HALLAM said that a note of warning should be given concerning the use of barium meals in patients with partial intestinal obstruction. It was all too easy to cause a complete obstruction with barium. He thought that as much, if not more, information could be obtained by the use of plain X-ray pictures taken with the patient in the supine and vertical head-down positions.

DR. MURRAY CLARKE said that the patients concerned had an incomplete obstruction, and he had successfully operated

on patients in two similar cases which presented as medical problems of disordered digestion and failure to thrive. He considered that any baby who failed to thrive, had intermittent vomiting, passed bulky stools, and had an enlarged flabby abdomen with a ladder pattern should be suspected of having a partial intestinal obstruction involving the ileum or colon. Plain X-ray films usually gave a picture of dilated coils of gut. Laparotomy might be necessary to establish the diagnosis.

Dr. Russell Howard, in reply, said that he considered that the main difficulty in diagnosis was during the quiescent phase when there was no vomiting. He considered that barium meals were not dangerous provided the surgeon and radiologist consulted prior to carrying out the examination, and that the surgeon was prepared to operate immediately if complete obstruction occurred.

## Dut of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

### PROSPECTUS.<sup>1</sup>

[*Australian Medical Journal*, August 1, 1846.]

The Australian Medical Gazette will be published on Saturday, the 1st of August next, and on the same day of every succeeding Month, in the form of a semi-quarto Sheet of Sixteen Pages in elegant and varied Type, entirely new, by William Baker, Proprietor and Publisher, 101 King Street, Sydney.

Availing himself of the facilities of conveyance which the Post Office Regulations provide for Publications in the Newspaper form, the Publisher proposes to send copies of the Journal to all parts of this and the neighbouring Colonies—to India Europe and other parts of the World. It will be edited by George Brooks, Esq., Senior Colonial Surgeon; and will contain Treatises on Disease of the Colony—Intelligence selected from recent Publications—and information of every kind useful to the Profession. But, in order that these objects be successfully accomplished, Medical Practitioners, and all persons interested in that and its subordinate Sciences, are respectfully reminded that the Healing Art is essentially progressive; and that, as a vehicle of isolated discoveries, and of passing events, the Journal cannot be very useful without an extensive cooperation.

A THOUSAND COPIES of the first Number, in the new form, will be dispersed gratuitously: and persons who desire to patronize the Australian Medical Journal will have the goodness to favour Mr. Baker with a call or message as early as possible.

Space will be found for ADVERTISEMENTS, and especially for such as may be connected with Science, or may concern the Profession in any of its Members from the qualified Pure to the Apothecary's Apprentice.

## Post-Graduate Work.

### THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

#### Visit of Dr. Paul Wood: Course and Lectures.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that Dr. Paul Wood, O.B.E., M.D., F.R.C.P., Director of the Institute of Cardiology, National Heart Hospital, London, will give a course of lecture-demonstrations in cardiology and two evening lectures during September and October, 1951. The course will be the first annual refresher course in cardiology of the Hallstrom Institute of Cardiology, which will be held in conjunction with the Post-Graduate Committee in Medicine. Dr. Wood will act as Guest Director of the Institute for a period of three weeks on the invitation of the Board of Directors of the Royal Prince Alfred Hospital.

<sup>1</sup> From the original in the Mitchell Library, Sydney.

The course will take the form of a number of lecture-demonstrations entitled "Modern Concepts of Circulatory Disease" and will extend over two weeks. It will be held in the Scot Skirving Lecture Theatre, Royal Prince Alfred Hospital, commencing at 2.30 p.m. each day from September 24 to October 5. It will be free to all members of the resident and honorary medical staff of the Royal Prince Alfred Hospital. A limited number of vacancies will be reserved for other practitioners applying to the Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney. Registration fee will be £5 5s.

#### Evening Lectures.

Dr. Wood will give the following lectures in the Stawell Hall, 145 Macquarie Street, Sydney, at 8.15 p.m.:

Tuesday, October 2: "Observations on Ischaemic Heart Disease."

Thursday, October 4: "The Mechanism and Treatment of Heart Failure."

These lectures will be part of the Annual Subscription Course of the Post-Graduate Committee in Medicine. The fee for twelve months, ending June 30 each year, is £2 2s. and will cover all visiting lecturers during that period. Applications should be made immediately to the Post-Graduate Committee in Medicine, 131 Macquarie Street, Sydney.

#### Week-End Course at Kempsey.

A week-end course will be held, in conjunction with the Eastern District Medical Association, at Kempsey on August 18 and 19, 1951. The visiting lecturers will be Dr. E. A. Hedberg and Dr. H. K. Porter. The fee for attendance will be £2 2s. Those wishing to attend should notify Dr. Angus McNeil, 89 River Street, West Kempsey, stating whether hotel accommodation is needed.

## Naval, Military and Air Force.

### APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 47, of July 5, 1951.

#### AUSTRALIAN MILITARY FORCES.

##### Permanent Military Forces.

###### Royal Australian Army Medical Corps.

To be Captain, 1st May, 1951.—2/40068 Edward Gordon Haig Manchester (Captain) (Short Service Commission for a period of two years).

##### Reserve Citizen Military Forces.

###### Royal Australian Army Medical Corps.

2nd Military District.—Lieutenant (Honorary Captain) N. R. D. Higham (2nd Military District), 22nd September, 1948.

5th Military District.—Captain A. T. H. Jolly (5th Military District), 7th July, 1950.

7th Military District.—Captain J. Couani (7th Military District), 28th May, 1951.

## Congresses.

### FIRST INTERNATIONAL CONGRESS ON MASS RADIOLGY.

THE first International Congress on Mass Radiology will be held at Sondalo (Sondrio), Italy, from September 1 to 3, 1951. It has been promoted by the High Commissariat of Hygiene and Public Health and is being organized by the Italian Federation for the Control of Tuberculosis in collaboration with the National Committee of Tourist-initiative. The business of the congress is arranged in four sections: (a) social problems of mass X-ray investigation; (b) mass X-ray investigation and tuberculous chest diseases; (c) mass X-ray investigation and non-tuberculous chest diseases; (d) technique and organizational problems of mass X-ray investigation. The congress fee is 3000 Italian lire.

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or five dollars or the equivalent. This, with the titles of any communications to be presented at the congress, should be sent to the Italian Federation for the Control of Tuberculosis, Via Nazionale 200, Rome. The advance hotel booking fee is 5000 Italian lire (or eight dollars) for a first-class hotel, 3000 lire (or five dollars) for a second-class hotel.

TENTH INTERNATIONAL CONGRESS OF  
Dermatology, 1952.

THE tenth International Congress of Dermatology will take place in London from July 21 to 26, 1952, under the patronage of His Majesty the King. The President will be Sir Archibald Gray. Further information may be obtained from the Australian Local Secretary, Dr. Adrian Johnson, 185 Macquarie Street, Sydney.

Australian Medical Board Proceedings.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, as duly qualified medical practitioners:

O'Brien, Horace Donough, M.B., B.Ch., B.A.O., 1934 (Dublin), Scottsdale.

Beard, Trevor Cory, M.R.C.S. (England), L.R.C.P., 1944, M.B., B.Ch., 1945 (Univ. Cambridge), D.R.C.O.G., 1946, Campbell Town.

Weber, Leighton Otto Davis, M.B., 1943 (Univ. Sydney), B.S. (Univ. Sydney), Rosebery.

Royal Australasian College of Surgeons.

A MEETING of the Royal Australasian College of Surgeons will be held on Wednesday, August 15, 1951, in the Stawell Hall of The Royal Australasian College of Physicians, 145 Macquarie Street, Sydney, at 8.15 p.m. Mr. K. W. Starr will speak on "Cortisone and ACTH: Their Application to Surgery". This meeting is open to all members of the medical profession.

Notice.

THE University of Melbourne Extension Committee, in association with the British Psychological Society (Australian Branch), announces that a public lecture will be given by Eleanor Schonell, M.A., Ph.D., in the Public Lecture Theatre of the University of Melbourne on Wednesday, August 15, 1951, at 8 p.m. The subject will be "The Education and Training of Spastic Children". A 16-millimetre film showing work at Carlson House Experimental School for Spastics will be shown at the conclusion of the address. The chairman will be Professor W. M. O'Neill, M.A., Professor of Psychology in the University of Sydney.

Public Health.

THIRD COMMONWEALTH AND EMPIRE HEALTH  
AND TUBERCULOSIS CONFERENCE.

THE third Commonwealth and Empire Health and Tuberculosis Conference will be held in London from July 8 to 13, 1952. The conference, which is being arranged by the

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JULY 7, 1951.<sup>1</sup>

| Disease.                  | New South Wales. | Victoria. | Queensland. | South Australia. | Western Australia. | Tasmania. | Northern Territory. <sup>2</sup> | Australian Capital Territory. | Australia. |
|---------------------------|------------------|-----------|-------------|------------------|--------------------|-----------|----------------------------------|-------------------------------|------------|
| Ankylostomiasis           | *                |           |             |                  |                    |           |                                  |                               |            |
| Anthrax                   | •                | •         |             |                  |                    |           |                                  |                               |            |
| Beriberi                  | •                | •         | •           | •                | •                  | •         | •                                | •                             | •          |
| Bilharziasis              |                  |           |             |                  |                    |           |                                  |                               |            |
| Cerebro-spinal Meningitis | 2(2)             |           | 1           |                  |                    |           |                                  |                               | 3          |
| Cholera                   | •                | •         |             |                  |                    |           |                                  |                               |            |
| Coastal Fever(a)          | •                | •         | •           | •                | •                  | •         | •                                | •                             | •          |
| Dengue                    |                  |           |             |                  |                    |           |                                  |                               |            |
| Diarrhoea (Infantile)     | 7(5)             | 4(4)      | 6(5)        |                  |                    |           |                                  |                               | 6          |
| Diphtheria                |                  |           | 7(5)        |                  | 1(1)               |           |                                  |                               | 1          |
| Dysentery (Amoebic)       | •                | 2(2)      | 3(3)        |                  |                    |           |                                  |                               | 5          |
| Dysentery (Bacillary)     |                  |           |             |                  |                    |           |                                  |                               |            |
| Encephalitis (Lethargica) | •                | •         | •           | 1(1)             | •                  | •         |                                  |                               | 1          |
| Erysipelas                | •                | •         |             |                  |                    |           |                                  |                               |            |
| Filariasis                | •                | •         |             |                  |                    |           |                                  |                               |            |
| Helminthiasis             | •                | •         | •           | •                | •                  | •         | •                                | •                             | 1          |
| Hydatid                   | •                | 1         | •           | •                | •                  | •         | •                                | •                             | 1          |
| Influenza                 | •                | •         | •           | •                | •                  | •         | •                                | •                             | •          |
| Lead Poisoning            | •                | •         |             |                  |                    |           |                                  |                               |            |
| Leprosy                   |                  |           |             |                  |                    |           |                                  |                               |            |
| Malaria(b)                | •                | •         | •           |                  |                    |           |                                  |                               |            |
| Measles                   | •                | •         | •           | 24(14)           | •                  | •         | 1                                | 25                            |            |
| Plague                    |                  |           |             |                  |                    |           |                                  |                               |            |
| Poliomyelitis             | 23(12)           | 4         | 22(14)      | 28(23)           | 4(3)               | •         |                                  |                               | 81         |
| Pitักษ                    |                  |           | •           |                  |                    |           |                                  |                               |            |
| Puerperal Fever           |                  |           |             |                  |                    |           | 1                                |                               | 1          |
| Rubella(c)                |                  |           |             |                  |                    |           |                                  |                               | 54         |
| Scarlet Fever             | 23(7)            | 14(11)    | 3(1)        | 6(5)             | 4(4)               | 4(1)      |                                  |                               |            |
| Smallpox                  | •                |           |             |                  |                    |           |                                  |                               | 2          |
| Tetanus                   | •                |           | 2(2)        | •                | •                  | •         |                                  |                               |            |
| Trachoma                  |                  |           |             |                  |                    |           |                                  |                               |            |
| Tuberculosis(d)           | 22(16)           | 8(4)      | 20(14)      | 9(7)             | 15(11)             | 5(1)      |                                  |                               | 70         |
| Typhoid Fever(e)          |                  |           |             |                  |                    |           |                                  |                               |            |
| Typhus (Endemic)(f)       |                  |           |             |                  |                    |           | 1(1)                             |                               | 1          |
| Undulant Fever            |                  |           |             |                  |                    |           | 1(1)                             |                               |            |
| Weil's Disease(g)         | •                | •         | 1           | •                | •                  | •         |                                  |                               | 1          |
| Whooping Cough            | •                | •         | •           |                  |                    |           |                                  |                               |            |
| Yellow Fever              | •                | •         | •           |                  |                    |           |                                  |                               |            |

<sup>1</sup> The form of this table is taken from the *Official Year Book of the Commonwealth of Australia*, Number 37, 1946-1947. Figures in parentheses are those for the metropolitan area.

<sup>2</sup> Figures not available.

<sup>a</sup> Figures incomplete owing to absence of returns from the Northern Territory.

<sup>b</sup> Not notifiable.

<sup>c</sup> Includes Mossman and Sarina fevers. <sup>(b)</sup> Mainly relapses among servicemen infected overseas. <sup>(c)</sup> Notifiable disease in Queensland in females aged over fourteen years. <sup>(d)</sup> Includes all forms. <sup>(e)</sup> Includes enteric fever, paratyphoid fevers and other *Salmonella* infections. <sup>(f)</sup> Includes scrub, murine and tick typhus. <sup>(g)</sup> Includes leptospirosis, Weil's and para-Weil's disease.

National Association for the Prevention of Tuberculosis, is open to all interested in preventive medicine, including members of the medical and veterinary professions, commercial and industrial executives, nurses, social workers, health administrators and members of public authorities and hospital boards. Intending delegates are asked to send their names to the Secretary-General, National Association for the Prevention of Tuberculosis, Tavistock House North, Tavistock Square, London, W.C.1, as soon as possible.

## Obituary.

### ETHEL CAROLINE PARNELL.

We regret to announce the death of Dr. Ethel Caroline Parnell, which occurred on July 17, 1951, at Melbourne.

### JACK CHARLES LEWIS.

We regret to announce the death of Dr. Jack Charles Lewis, which occurred on July 27, 1951, at Melbourne.

### WILLIAM JAMES ALLEN.

We regret to announce the death of Dr. William James Allen, which occurred on July 27, 1951, at Bentleigh, Victoria.

### ARTHUR EDWIN GROUNDS.

We regret to announce the death of Dr. Arthur Edwin Grounds, which occurred on July 29, 1951, at Launceston, Tasmania.

### FRANCIS PATRICK QUIRK.

We regret to announce the death of Dr. Francis Patrick Quirk, which occurred on July 31, 1951, at Summer Hill, New South Wales.

## Medical Appointments.

Dr. J. A. Oliphant has been appointed public vaccinator for the Shire of Lowan, Victoria.

Dr. J. S. Rawlings has been appointed public vaccinator for the Shire of Warragul, Victoria.

Dr. G. D. Charters has been appointed public vaccinator for the Shire of Upper Yarra, Victoria.

Dr. I. Buzzard has been appointed public vaccinator for the Shire of Warrnambool, Victoria.

Dr. A. G. Brown has been appointed public vaccinator for the town of Colac, Victoria.

Dr. F. G. T. de Crespiigny has been appointed public vaccinator for the Shire of Ararat, Victoria.

Dr. P. M. Daw has been appointed public vaccinator for the Shire of Omeo, Victoria.

## Dominations and Elections.

The undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Dunlop, John Albert Gordon, M.B., B.S., 1951 (Univ. Sydney), Royal North Shore Hospital, St. Leonards. Madew, Lindsay Edward, M.B., B.S., 1951 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown.

Fotheringham, Joan Marcelle, M.B., B.S., 1942 (Univ. Sydney), 20 Cooper Street, Strathfield. Breitner, Lothar Franz, M.B., B.S., 1944 (Univ. Sydney), 1 Canonbury Grove, Dulwich Hill.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association: Shumack, Ian Albert, M.B., B.S., 1951 (Univ. Sydney), Sydney Hospital, Sydney. Skein, Marie Joyce, M.B., B.S., 1951 (Univ. Sydney), Royal Prince Alfred Hospital, Camperdown. Roche, John Vincent, M.B., B.S., 1951 (Univ. Sydney), Saint Vincent's Hospital, Darlinghurst.

## Diary for the Month.

AUG. 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
 AUG. 15.—Western Australian Branch, B.M.A.: General Meeting.  
 AUG. 16.—Victorian Branch, B.M.A.: Executive Meeting.  
 AUG. 21.—New South Wales Branch, B.M.A.: Medical Politics Committee.  
 AUG. 22.—Victorian Branch, B.M.A.: Council Meeting.  
 AUG. 23.—New South Wales Branch, B.M.A.: Clinical Meeting.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178 North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

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